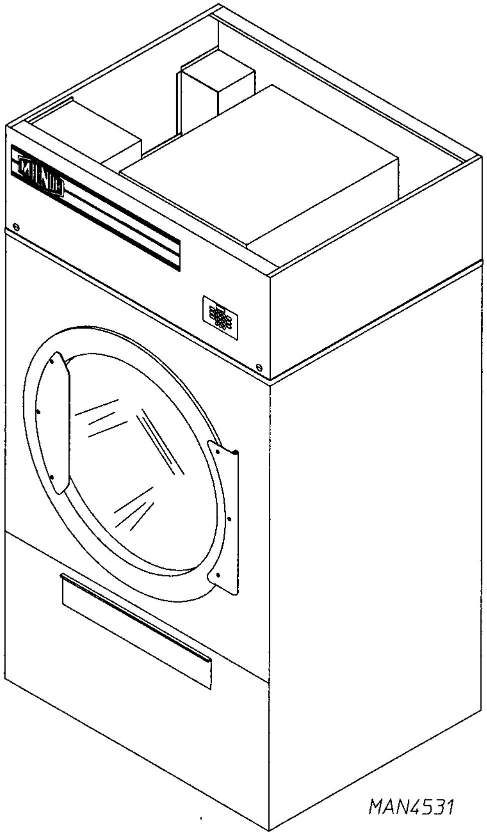
American Dryer Corp.

CE 96-190



Service Manual

American Dryer Corporation
88 Currant Road
Fall River, MA 02720-4781
Telephone: (508) 678-9000 / Fax: (508) 678-9447
e-mail: techsupport@amdry.com

022400DMG/SL/pb

ADC Part No. 450425

Retain This Manual In A Safe Place For Future Reference

American Dryer Corporation products embody advanced concepts in engineering, design, and safety. If this product is properly maintained, it will provide many years of safe, efficient, and trouble-free operation.

ONLY qualified technicians should service this equipment.

OBSERVE ALL SAFETY PRECAUTIONS displayed on the equipment or specified in the installation/operator's manual included with the dryer.

The following "**FOR YOUR SAFETY**" caution **must be** posted near the dryer in a prominent location.

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

POUR VOTRE SÉCURITÉ

Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil ou de yout autre appareil.

We have tried to make this manual as complete as possible and hope you will find it useful. **ADC** reserves the right to make changes from time to time, without notice or obligation, in prices, specifications, colors, and material, and to change or discontinue models.

Important

For your convenience, log the following information:

DATE OF PURCHASE ____________ **MODEL NO.** CE 96-190

DISTRIBUTORS NAME ____________

Serial Number(s) ____________

Replacement parts can be obtained from your distributor or the **ADC** factory. When ordering replacement parts from the factory, you can FAX your order to **ADC** at (508) 678-9447 or telephone your orders directly to the **ADC** Parts Department at (508) 678-9000. Please specify the dryer **model number** and **serial number** in addition to the **description** and **part number**, so that your order is processed accurately and promptly.

The illustrations on the following pages may not depict your particular dryer exactly. The illustrations are a composite of the various dryer models. Be sure to check the descriptions of the parts thoroughly before ordering.

"IMPORTANT NOTE TO PURCHASER"

Information must be obtained from your local gas supplier on the instructions to be followed if the user smells gas. These instructions must be posted in a prominent location near the dryer.

IMPORTANT

YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

"Caution: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper operation."

«Attention: Lor des opérations d'entretien des commandes étiqueter tous fils avant de les déconnecter. Toute erreur de câblage peut étre une source de danger et de panne.»

CAUTION

DRYERS SHOULD NEVER BE LEFT UNATTENDED WHILE IN OPERATION.

WARNING

CHILDREN SHOULD NOT BE ALLOWED TO PLAY ON OR NEAR THE DRYER(S).

CHILDREN SHOULD BE SUPERVISED IF NEAR DRYERS IN OPERATION.

FOR YOUR SAFETY

DO NOT DRY MOP HEADS IN THE DRYER.

DO NOT USE DRYER IN THE PRESENCE OF DRY CLEANING FUMES.

WARNING

UNDER NO CIRCUMSTANCES should the door switch or the heat circuit devices ever be disabled.

WARNING

The dryer must never be operated with any of the back guards, outer tops, or service panels removed. PERSONAL INJURY or FIRE COULD RESULT.

WARNING

DRYER MUST NEVER BE OPERATED WITHOUT THE LINT FILTER/SCREEN IN PLACE, EVEN IF AN EXTERNAL LINT COLLECTION SYSTEM IS USED.

IMPORTANT

PLEASE OBSERVE ALL SAFETY PRECAUTIONS displayed on the equipment and/or specified in the installation and operator's manual included with the dryer.

Dryers **must not** be installed or stored in an area where it will be exposed to water or weather.

The wiring diagram for the dryer is located in the front electrical control box area.

Table of Contents

ML-96 SERVICE MANUAL TABLE OF CONTENTS .... AA

ML-122 SERVICE MANUAL TABLE OF CONTENTS .... BB

ML-130 SERVICE MANUAL TABLE OF CONTENTS CC

ML-145/170 SERVICE MANUAL TABLE OF CONTENTS .... DD

ML-175 SERVICE MANUAL TABLE OF CONTENTS .... EE

ML-190 SERVICE MANUAL TABLE OF CONTENTS .... FF

ML-96 Table of Contents

SECTION I

IMPORTANT INFORMATION A3
- A. Safety Precautions A3

SECTION II

ROUTINE MAINTENANCE A5
- A. Cleaning A5
- B. Adjustments A6
- C. Lubrication A6

SECTION III

INSTALLATION REQUIREMENTS A7
- A. Enclosure, Air Supply, and Exhaust Requirements A7
- B. Electrical and Gas Requirements A7
- C. Operational Service Check Procedure A8

SECTION IV

DESCRIPTION OF PARTS A10
- A. Computer Panel (Microprocessor) A10
- B. Reversing Relay Panel A10
- C. HSI (Hot Surface Ignition) Module (Gas Models Only) A11
- D. Gas Burner Assembly A11
- E. Drive Motor A11
- F. Drive Shaft Assembly A12
- G Idler Shaft Assembly A12
- H. Tumbler (Basket) A12
- I. Main Door Switch A13
- J. Sail Switch (Gas Models Only) A13
- K. Burner Hi-Limit (Gas Models Only) A13
- L. Manual Reset Thermostat A14
- M. Lint Screen A14
- N. Lint Drawer Switch A14

SECTION V

SERVICING A15
- A. Computer Controls A15
- B. Ignition Controls A17
- C. Manual Reset Burner Hi-Limit Thermostat (Gas Models Only) Replacement A20
- D. Sail Switch Assembly (Gas Models Only) A21
- E. Front Panel and Main Door Assemblies A22
- F. Drive Shaft Pulley Replacement A25
- G. Tumbler Wheel Replacement on Drive Assembly (Taper Lock Models) A25
- H. Tumbler Wheel Replacement on Idler Assembly (Taper Lock Models) A26
- I. Basket Assembly A27
- J. 1-15/16 Flange Bearing Replacement A27
- K. Rotational Sensor Assembly A28
- L. Idler Shaft Pillow Block Bearing Replacement A29
- M. Drive Shaft Pillow Block Bearing Replacement A29
- N. V-Belt Adjustment (Motor to Drive Axle) A29
- O. Motors A30
- P. Motorized Impellor (Blower) Replacement A31
- Q. Lint Door Switch Replacement A31

SECTION VI

TROUBLESHOOTING A32

SECTION VII

PHASE 6 OPL SYSTEM DIAGNOSTICS A36
- A. Diagnostic (L.E.D. [Light Emitting Diode] Display) Failure Codes A36
- B. L.E.D. (Light Emitting Diode) Display Indicators A38
- C. Phase 6 OPL Microprocessor Controller (Computer) Relay Output L.E.D. (Light Emitting Diode) Indicators A39
- D. L.E.D. Codes A43
- E. Computer Logic and Wiring Diagram A45

SECTION VIII

TECHNICAL INFORMATION A51
- A. Motor Plate (High and Low Voltage) A51
- B. Data Label A52
- C. How To Use A Manometer A53
- D. ML-96 Tool List A54

SECTION I

IMPORTANT INFORMATION

A. SAFETY PRECAUTIONS

WARNING: For your safety, the information in this manual ***must be*** followed to minimize the risk of fire or explosion or to prevent property damage, personal injury, or loss of life.

WARNING: The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. PERSONAL INJURY or FIRE COULD RESULT.

1. **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
2. Purchaser/user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions **should be** posted in a prominent location.
3. WHAT TO DO IF YOU SMELL GAS.
    a. **DO NOT** try to light any appliance.
    b. **DO NOT** touch any electrical switch.
    c. **DO NOT** use any phone in your building.
    d. Clear the room, building, or area of **ALL** occupants.
    e. Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
    f. If you **cannot** reach your gas supplier, call the fire department.
4. Installation and service **must be** performed by a qualified installer, service agency, or gas supplier.
5. Dryer(s) **must be** exhausted to the outdoors.
6. Although **ADC** produces a very versatile machine, there are some articles that, due to fabric composition or cleaning method, **should not be** dried in it.

WARNING: Dry only water-washed fabrics. ***DO NOT*** dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "all purpose" cleaner.
EXPLOSION COULD RESULT.

WARNING: ***DO NOT*** dry rags or articles coated or contaminated with gasoline, kerosene, oil, paint, wax.
EXPLOSION COULD RESULT.

WARNING: ***DO NOT*** dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

WARNING: ***DO NOT*** use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubber materials. Drying in a heated tumbler (basket) may damage plastics or rubber and also may be a fire hazard.

7. A program **should be** established for the inspection and cleaning of lint in the heating unit area, exhaust duct work, and inside the dryer. The frequency of inspection and cleaning can best be determined from experience at each location.

WARNING: The collection of lint in the burner area and exhaust duct work can create a potential fire hazard.

8. For personal safety, the dryer **must be** electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

NOTE: Failure to do so will VOID THE WARRANTY.

9. **UNDER NO CIRCUMSTANCES** should the dryer door switches, lint door switch, heat safety circuit ever be disabled.

WARNING: PERSONAL INJURY or FIRE COULD RESULT.

10. This dryer is not to be used in the presence of dry cleaning solvents or fumes.

11. Remove articles from the dryer as soon as the drying cycle has been completed.

WARNING: Articles left in the dryer after the drying and cooling cycles have been completed can create a fire hazard.

12. **DO NOT** operate steam dryers with more than 125 PSI (8.61 bars) steam pressure. Excessive steam pressure can damage steam coil and/or harm personnel.

13. Replace leaking flexible hoses or other steam fixtures immediately. **DO NOT** operate the dryer with leaking flexible hoses. **PERSONAL INJURY MAY RESULT.**

14. **READ and FOLLOW ALL CAUTION and DIRECTION LABELS ATTACHED TO THE DRYER.**

WARNING: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

SECTION II

ROUTINE MAINTENANCE

A. CLEANING

A program and schedule **should be** established for periodic inspection, cleaning, and removal of lint from various areas of the dryer, as well as throughout the duct work system. The frequency of cleaning can best be determined from experience at each location. Maximum operating efficiency is dependent upon proper air circulation. The accumulation of lint can restrict this airflow. If the guidelines in this section are met, an **ADC** dryer will provide many years of efficient, trouble free, and – most importantly – safe operation.

WARNING: LINT FROM MOST FABRICS IS HIGHLY COMBUSTIBLE. THE ACCUMULATION OF LINT CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: KEEP DRYER AREA CLEAR and FREE FROM COMBUSTIBLE MATERIALS, GASOLINE and OTHER FLAMMABLE VAPORS and LIQUIDS.

NOTE: Suggested time intervals shown for average usage which is considered six (6) to eight (8) operational (running) hours per day.

Clean lint drawer and screen every third load.

NOTE: Frequency can best be determined at each location.

DAILY
(beginning) of each work shift.

Clean lint from the drawer and screen. Inspect lint screen and replace if torn.

WEEKLY

Clean lint accumulation from lint chamber, thermostat and microprocessor temperature sensor (sensor bracket) area.

WARNING: To avoid the hazard of electrical shock, discontinue electrical supply to dryer.

90 DAYS

Remove lint from tumbler (basket), drive motors and surrounding areas. Remove lint from gas valve burner area with a dusting brush or vacuum cleaner attachment.

NOTE: To prevent damage, avoid cleaning or touching ignitor and flame-probe assembly.

Remove lint accumulation from inside control box and at rear area behind control box.

EVERY 6 MONTHS

Inspect and remove lint accumulation in customer furnished exhaust duct work system and from dryer's internal exhaust ducting.

WARNING: THE ACCUMULATION OF LINT IN THE EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: ***DO NOT*** OBSTRUCT THE FLOW OF COMBUSTION and VENTILATION AIR. CHECK CUSTOMER FURNISHED BACK DRAFT DAMPER IN EXHAUST DUCT WORK. INSPECT and REMOVE ANY LINT ACCUMULATION WHICH CAN CAUSE DAMPER TO BIND or STICK.

NOTE: A back draft damper that is sticking partially closed can result in slow drying and shutdown of the heat circuits safety switches or thermostats.

NOTE: When cleaning dryer cabinets, avoid using harsh abrasives. A product intended for cleaning appliances is recommended.

B. ADJUSTMENTS

7 DAYS AFTER INSTALLATION and EVERY 6 MONTHS THEREAFTER

Inspect bolts, nuts, screws, (bearing set screws), nonpermanent gas connections (unions, shut-off valves, orifices, and grounding connections). Motor and drive belts **should be** examined. Cracked or seriously frayed belts **should be** replaced. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of ALL safety devices (door switch, lint drawer switch, sail switch, burner and hi-limit thermostats).

C. LUBRICATION

The drive shaft bearings and idler shaft bearings **should be** lubricated every three (3) months. Use a #3 grease or equivalent. Lubrication is necessary.

The motor bearings and under normal/most conditions the tumbler bearing are permanently lubricated. It is physically possible to re-lubricate the tumbler bearing if you choose even though this practice may not be necessary. Use Industrial Chevron ball or roller bearing SRI grease NLGI2 or its equivalent which has a broad operating temperature range of 22° F (-6° C) to 350° F (177° C).

SECTION III

INSTALLATION REQUIREMENTS

Installation **should be** performed by competent technicians in accordance with local and state codes. In the absence of these codes, the installation **must conform** to applicable AMERICAN NATIONAL STANDARDS: National Fuel Gas Code ANSI.Z223.1-LATEST EDITION or National Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION (for General Installation and Gas Plumbing) or Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

A. ENCLOSURE, AIR SUPPLY, and EXHAUST REQUIREMENTS

NOTE: The following information is very brief and general. For detailed description, refer to the ML-96 Installation Manual supplied with dryer. (**ADC** Part No. 113053.)

Bulkheads and partitions around the dryer **should be** made of noncombustible materials. Allowances **should be** made for the opening and closing of the control door and lint door. (Refer to appropriate installation manual for recommended distances and minimum allowances required.)

When the dryer is operating, it draws in room air, heats it, passes this air through the tumbler (basket), and exhausts it out of the building. Therefore, the room air **must be** continually replenished from the outdoors. If the make-up air is inadequate, drying time and drying efficiency will be adversely affected. Ignition problems and sail switch "fluttering" problems on gas dryers may result, and you also could have premature motor failure from overheating. The air supply **must be** given careful consideration to insure proper performance of each dryer.

IMPORTANT: Make-up air ***must be*** provided from a source free of dry cleaning fumes. Make-up air that is contaminated by dry cleaning fumes will result in irreparable damage to motors and other dryer components.

Exhaust duct work **should be** designed and installed by a competent technician. Improperly sized duct work will create excessive back pressure which will result in slow drying, increased use of energy, and shutdown of the burner by the airflow (sail) switch, burner hi-limit or lint chamber hi-heat protector thermostat. (Refer to appropriate Installation Manual for more detail.)

CAUTION: IMPROPERLY SIZED or INSTALLED EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

B. ELECTRICAL and GAS REQUIREMENTS

It is your responsibility to have ALL electrical connections made by a properly licensed and competent electrician to assure the electrical installation is adequate and conforms with local and state regulations or codes. In the absence of such codes, ALL electrical connections, material, and workmanship **must conform** to the applicable requirements of the National Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

IMPORTANT: Failure to comply with these codes or ordinances and the requirements stipulated in this manual can result in personal injury or component failure.

The dryer installation **must meet** the American National Standard, National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections) as well as, local codes and ordinances, and **must be** done by a qualified technician.

NOTE: Undersized gas piping will result in ignition problems and slow drying and can create a safety hazard.

The dryer **must be** connected to the type of gas (natural or L.P. [liquid propane]) indicated on the dryer data label. If this information **DOES NOT** agree with the type of gas available, contact the distributor who sold the dryer or contact the factory.

The gas input ratings shown on the dryer data label are for elevations up to 2,000 feet (610 meters), unless elevation requirements of over 2,000 feet (610 meters) were specified at the time the dryer order was placed with the factory. The adjustment for dryers in the field for elevations over 2,000 feet (610 meters) are made by changing the burner orifices. If this adjustment is necessary, contact the distributor who sold the dryer or contact the factory.

NOTE: Any burner changes ***must be*** made by a qualified technician.

C. OPERATIONAL SERVICE CHECK PROCEDURE

1. Turn on electric power to the dryer.
2. To start dryer:
    a. Display will read "READY."
    b. Press "E" on the keyboard (touchpad) of microprocessor controller (computer).
    c. The dryer will start and display will show "dRYING MANUAL CYCLE, 30 MIN REMAIN," then display the drum temp.

NOTE: Pressing touchpad selections "A," "B," "C," "D," and "F" will also start the dryer. Six (6) preprogrammed drying cycles (A through F) have been stored in the computer's memory. (Refer to computer operator's manual for details.)

3. Make a complete operational check of **ALL** the operating controls to assure that the timing is correct, temperature selection switches are functioning, etc.
4. Make a complete operational check of **ALL** safety-halted circuits: door switches, hi-limit thermostat, sail switch, cycling thermostats, etc.
5. For gas dryers a gas pressure test **should be** taken at the gas valve pressure tap of each dryer to assure that the water column pressure is correct and consistent.

NOTE: Water column pressure requirements (measured at the pressure tap on the gas valve body):

Natural Gas - 3.5 inches water column (W.C.) - 8.7 mb.
L.P. Gas - 10.5 inches water column (W.C.) - 26.1 mb.

6. If computer program changes are required, refer to the Phase 6 OPL Operator's Manual (**ADC** Part No. 113022) for details.

7. The dryer **should be** operated through one complete cycle to assure that no further adjustments are necessary and that **ALL** components are functioning properly.

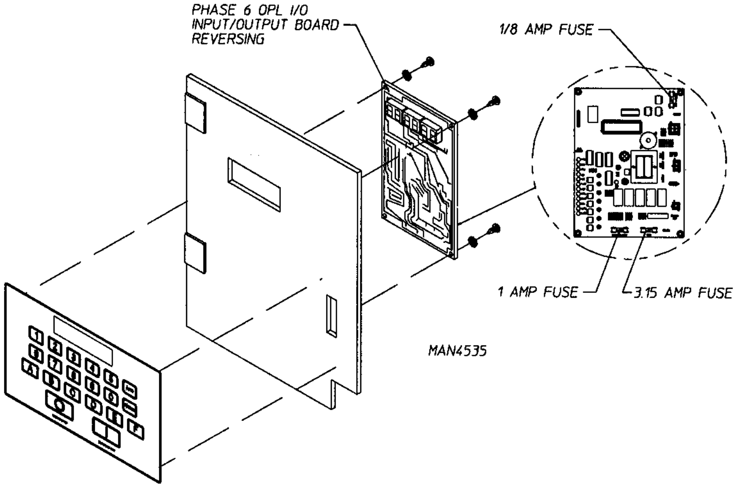
8. Check the electric service phase sequence. While the dryer is operating, check to see if the blower wheel is rotating in the proper direction. Looking from the front, the blower wheel should spin in the clockwise (CW) direction. If so, the phasing is correct. If the phasing is incorrect, reverse two (2) leads at connections L1, L2, or L3 of power supply to the dryer.

SECTION IV

DESCRIPTION OF PARTS

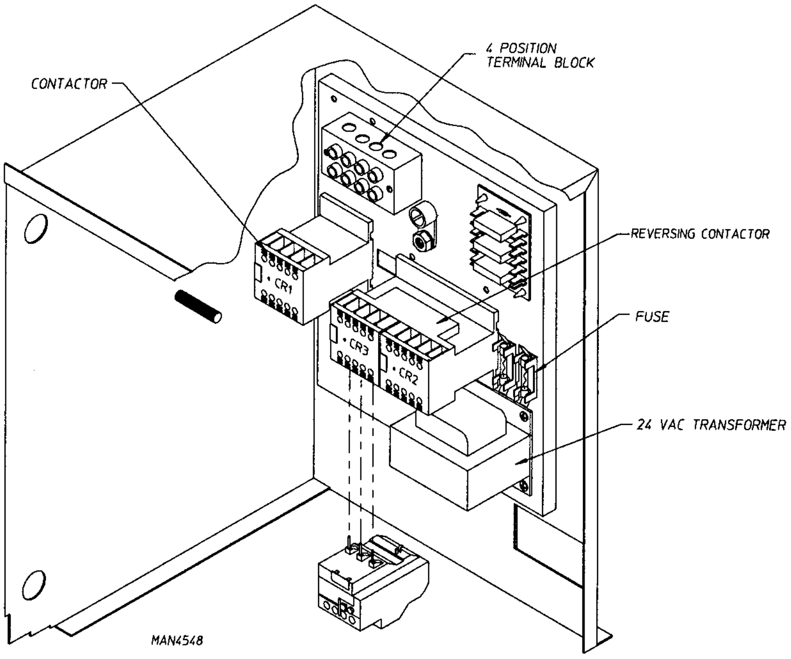
A. COMPUTER PANEL (MICROPROCESSOR)

Lifting the control door will reveal the control panel assembly. Opening the control panel will allow access to the major components which include the computer board and keypad (touchpad). The keypad (touchpad) inputs to the computer what temperature and program has been selected. The computer controls the entire operation of the machine. It accepts inputs and gives outputs throughout the machine.


PHASE 6 OPL I/O INPUT/OUTPUT BOARD REVERSING
1/8 AMP FUSE
1 AMP FUSE
3.15 AMP FUSE
MAN4535

B. REVERSING RELAY PANEL

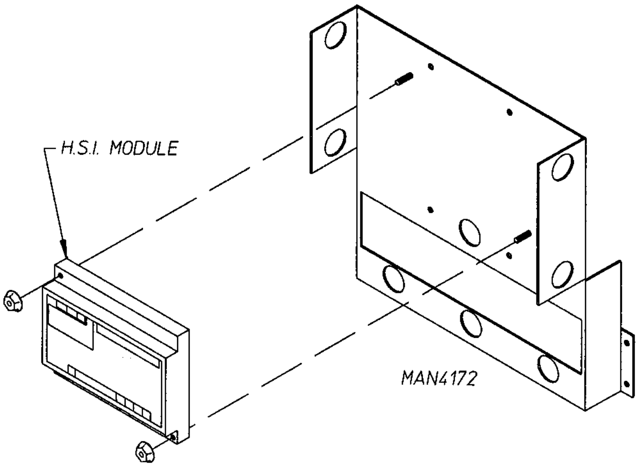
Lifting the control door will reveal the reversing relay box. Located on the back of the relay box is the reversing relay panel. Included on this panel is a four (4) position terminal block, blower overload, blower contactor, reversing contactor, 24 VAC transformer, fuse or circuit breaker, ground lug, and an arc suppressor (A.S.) board.


CONTACTOR
4 POSITION TERMINAL BLOCK
REVERSING CONTACTOR
FUSE
24 VAC TRANSFORMER
CR1
CR3
CR2
MAN4548

...with fuses

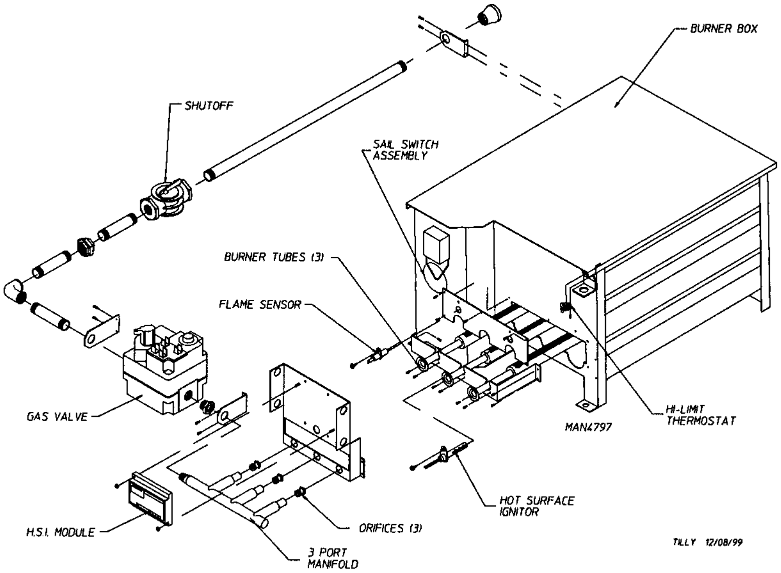
C. HSI (HOT SURFACE IGNITION) MODULE (Gas Models Only)

The HSI (Hot Surface Ignition) system consists of a microprocessor based control module, along with a hot surface ignitor probe and a flame probe assembly. The hot surface ignitor is a silicon carbide ignitor that upon application of 24 VAC will glow bright orange for the inter-purge time period. Upon ignition, the resistance in the flame sensor electrode changes and the information is sent to the HSI (Hot Surface Ignition) module via the sensor probe lead connection to the module. Once the resistance is changed and sensed, the HSI (Hot Surface Ignition) module will sustain the gas flow (provide 24 VAC power to the gas valve).


H.S.I. MODULE
MAN4172

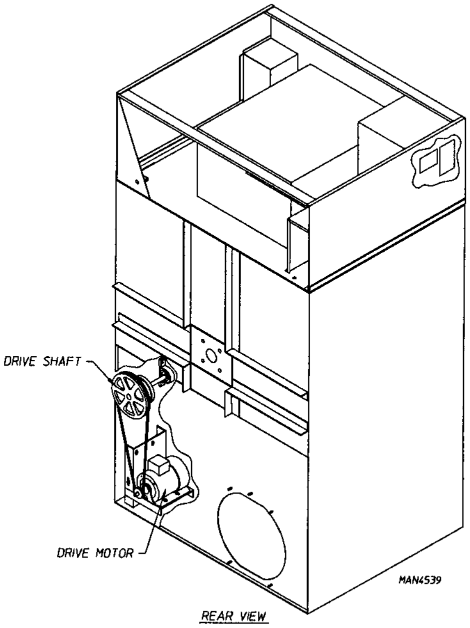
D. GAS BURNER ASSEMBLY

Gas heated dryers are equipped with a gas burner assembly consisting of three (3) burner tubes, gas valve, hot surface ignitor, flame sensor, sail switch, and hi-limit thermostat. The inlet piping enters through the rear of the dryer on the left hand side (viewing from the front) and runs to the front of the dryer where the gas valve is located.


BURNER BOX
SHUTOFF
SAIL SWITCH ASSEMBLY
BURNER TUBES (3)
FLAME SENSOR
GAS VALVE
HI-LIMIT THERMOSTAT
MAN4797
HOT SURFACE IGNITOR
ORIFICES (3)
H.S.I. MODULE
3 PORT MANIFOLD
TILLY 12/08/99

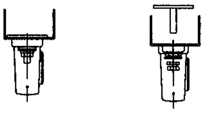
E. DRIVE MOTOR

The T.E.F.C. (Totally Enclosed, Fan-Cooled) drive motor is located in the front left corner (viewing from front) behind the front panel of the dryer. It sits on an adjustable base so the motor can be easily adjusted to the left or right, up or down, forward or backward. The drive motor is a 3 HP motor and operates on 208 to 460 volts, 50/60 Hz, 3-phase (3ø).

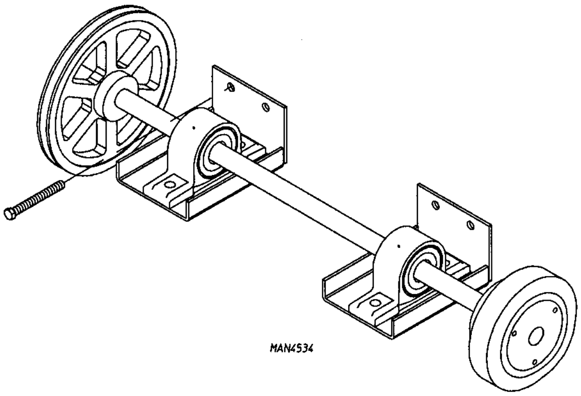

DRIVE SHAFT
DRIVE MOTOR
MAN4539
REAR VIEW

F. DRIVE SHAFT ASSEMBLY

(Viewing from the front of the dryer.)

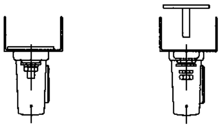


Behind front panel on the left side of the dryer, you can view the drive shaft assembly which consists of a 9-inch (22.86 cm) drive pulley, two (2) 6-inch (15.24 cm) wheels, one (1) taper lock bearings, and one (1) 1-inch (2.54 cm) pillow block bearings.

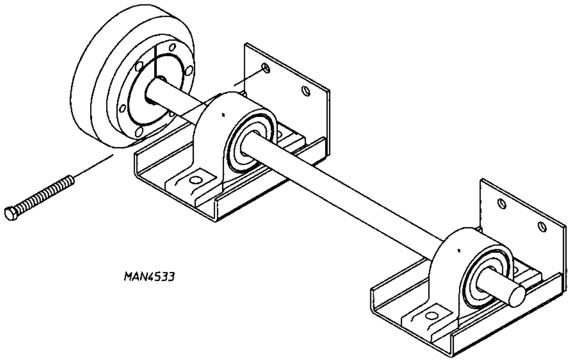


G. IDLER SHAFT ASSEMBLY

(Viewing from the front of the dryer.)

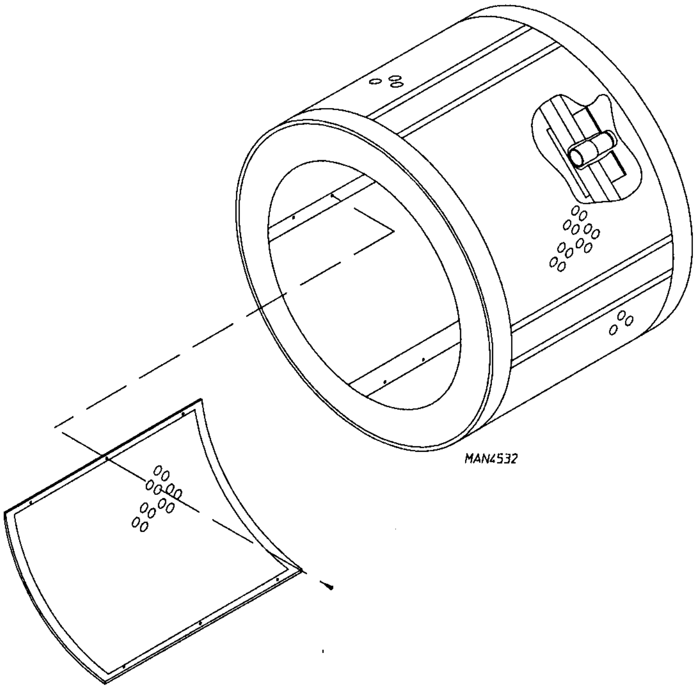


Behind the front panel on the right side of the dryer you will view the idler shaft assembly which consists of one (1) 6-inch (15.24 cm) wheels, one (1) taperlock bearings, and two (2) 1-inch (2.54 cm) pillow block bearings.



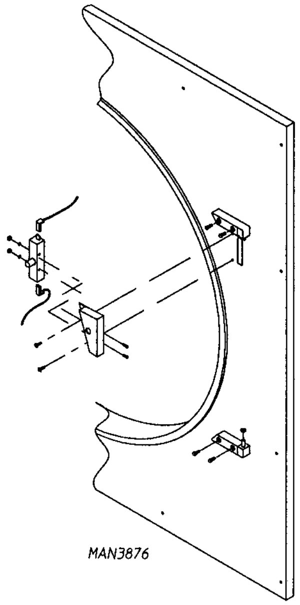
H. TUMBLER (BASKET)

The tumbler (basket) consists of a tumbler (basket) which has four (4) ribs and four (4) removable perforated panels which are mounted to the rib sections of the tumbler (basket) with 1/4-20 x 1/4” socket button head screws.



I. MAIN DOOR SWITCH

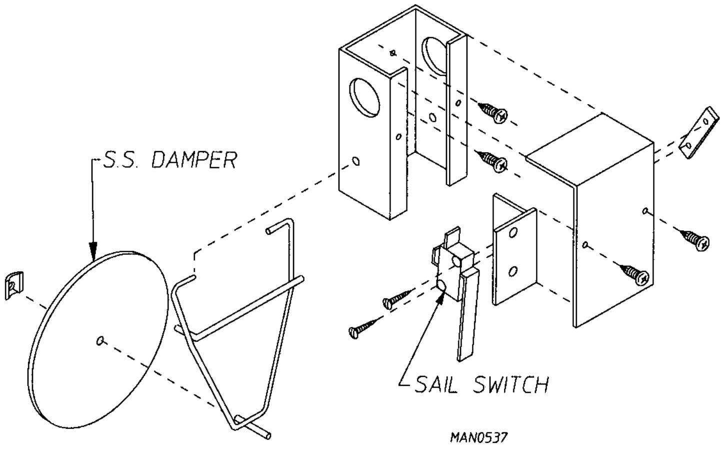
The main door switch is mounted to the front panel behind the main door. When the main door opens, the switch will also open, preventing the dryer from operating. The main door switch is a safety device and **should never be** disabled.



CURRENT PRODUCTION

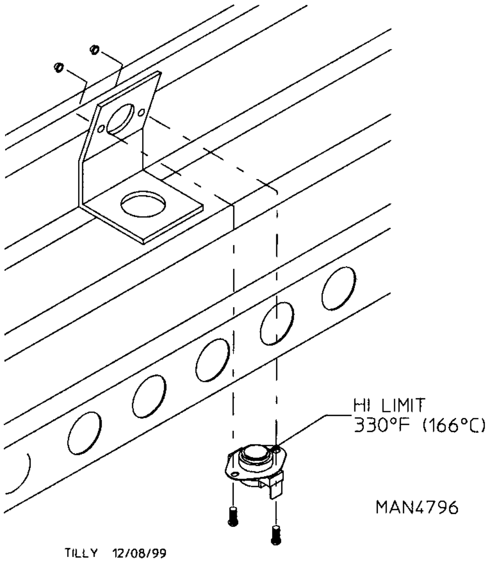
J. SAIL SWITCH (Gas Models Only)

The sail switch is located on the front of the burner box. A sail switch consists of a round damper plate on a lever arm which is in contact with an electric switch. When the fan or air blower comes on, it draws air through the gas burner. This creates a negative pressure inside the burner box, and this negative pressure pulls in the round damper and activates the sail switch. If there is improper airflow, the damper will not pull in, preventing the burner from starting. The display will also read “no airflow” with an audio indication. Improper airflow can be caused by improperly designed exhaust ducting where the duct run is too long or has too many sharp bends in it. It can also be caused by a lack of make-up air.



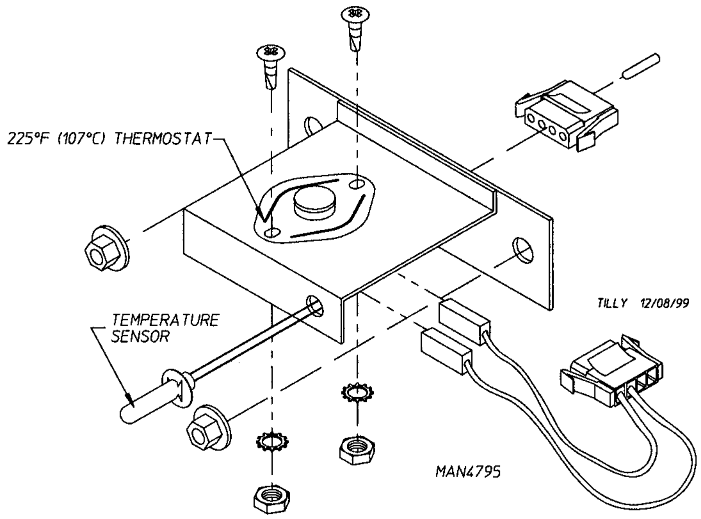
K. BURNER HI-LIMIT (Gas Models Only)

The high limit thermostat is a manual reset disc-type thermostat set at 330° F (166° C) and located near the burner. If the burner flame gets too hot, this thermostat will shut off the burner. This is generally caused by low airflow through the dryer. In a hi-limit situation the display will read “bURNER SAFETY FAIL” with an audio indication. The manual reset thermostat **must be** reset manually or the 24 VAC burner circuit will never be complete. This will cause the Phase 6 microprocessor (computer) to continue to go off on “bURNER SAFETY FAIL” with an audio indication.



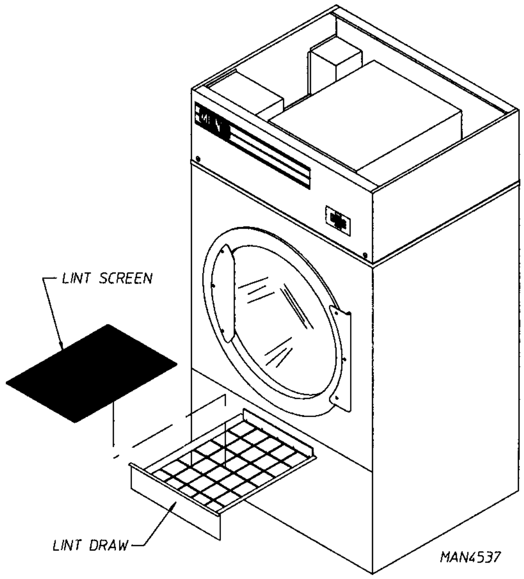
L. MANUAL RESET THERMOSTAT

This is located inside the dryer in the lint compartment above the lint screen. This thermostat senses the heated air after it passes through the tumbler (basket). If the air temperature gets too hot, the thermostat will shut off the burner. The dryer will not run until the air temperature cools down. At this time, the manual reset thermostat **must be** reset manually or the 24 VAC burner circuit will never be completed. Tumbler (basket) and blower will run but the dryer will not heat. If the temperature sensor opens the display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the thermostat opens the display will read "dRUM SAFETY FAIL" with an audio indication.


225°F (107°C) THERMOSTAT
TEMPERATURE SENSOR
TILLY 12/08/99
MAN4795

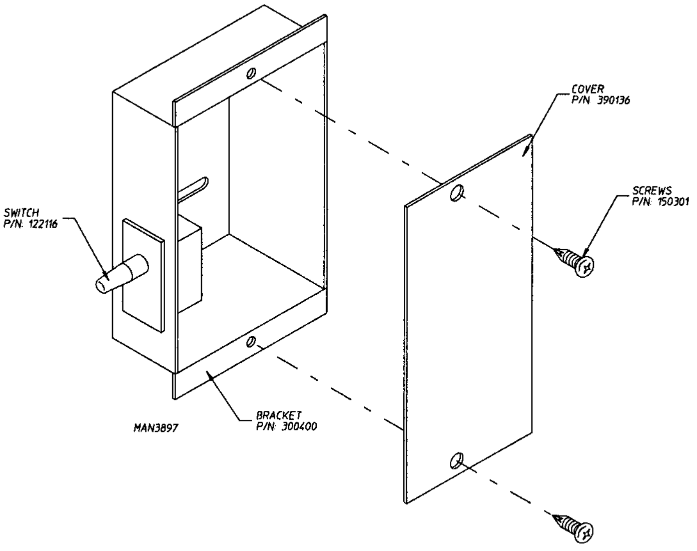
M. LINT SCREEN

The lint screen is located in the front of the dryer in the Lint Coop Assembly. To clean the lint off the screen simply brush the screen clean. The lint screen **must be** kept clean in order for the dryer to operate properly and efficiently. Inspect the screen for tears and replace as needed.


LINT SCREEN
LINT DRAW
MAN4537

N. LINT DRAWER SWITCH

The lint door switch is located in the lint compartment and attached to the side of the lint coop. The lint door switch ensures that the dryer will operate only when the lint door is completely closed. This is a safety device and **should never be** disabled.


COVER P/N 390136
SCREWS P/N 150301
SWITCH P/N 122116
BRACKET P/N 300400
MAN3897

SECTION V

SERVICING

INTRODUCTION

ALL electrical and mechanical service or repairs **should be** made with the electrical power to the dryer disconnected (power off).

WARNING: PERSONAL INJURY COULD RESULT.

The information provided in this section **should not be** misconstrued as a device for use by an untrained person making repairs. Service work **should be** performed by competent technicians in accordance with local, state, and federal codes. When contacting the factory for assistance, always have the dryer model and serial numbers available.

CAUTION: Observe **ALL** safety precautions displayed on the dryer or specified in this manual before and while making repairs.

Before considering replacement, make sure that **ALL** connectors are in place and making proper contact.

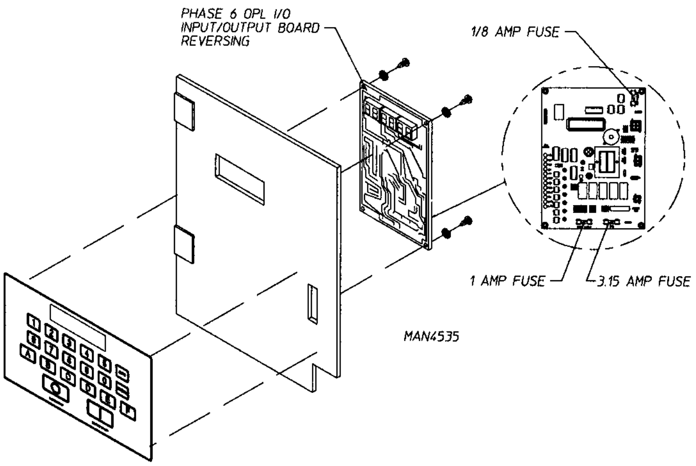
A. COMPUTER CONTROLS

Display Board Replacement

1. Discontinue electrical power to the dryer.
2. Unplug keyboard (touchpad) ribbon from the rear of the computer.
3. Unplug ribbon cable assembly from the rear of the computer.
4. Remove the two (2) screws securing the computer to the computer box door. Remove the computer by pulling the other two (2) corners off the clinch studs.
5. Install new display by reversing this procedure.

Computer Board Replacement

1. Disconnect electrical power to the dryer.
2. Unplug keyboard (touchpad) ribbon from rear of the computer.
3. Unplug **ALL** wiring harnesses connected to the computer board.



4. Remove the two (2) screws securing the computer to the computer panel. Remove the computer by pulling the other two (2) corners off the clinch studs.

5. Install new computer by reversing this procedure.

Keyboard (Touchpad) Label Assembly Replacement

1. Discontinue electrical power to the dryer.

2. Unplug keyboard (touchpad) ribbon from rear of the computer.

3. Slowly peel off and remove keyboard (touchpad) label assembly from control panel.

4. Peel paper backing off new keyboard (touchpad) label assembly.

5. Holding the new keyboard (touchpad) label assembly close to the panel, insert the keyboard (touchpad) ribbon through the rectangular slot in the control panel. Align label assembly into position by matching the red viewing window on the label to the rectangular cutout in the panel and gently press into place.

6. Connect keyboard (touchpad) ribbon to the computer.

7. Reestablish electrical power to the dryer.

Microprocessor Temperature Sensor Probe Replacement

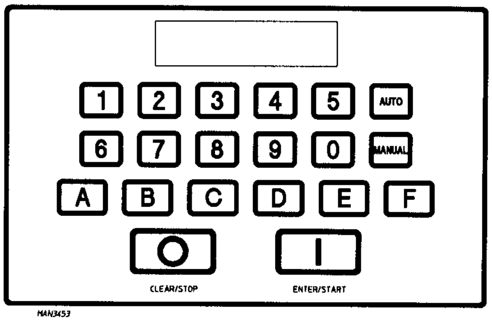
1. Discontinue electrical power to the dryer.

2. Remove perforated panel from tumbler (basket).

3. Remove microprocessor sensor bracket assembly from dryer.

   a. Disconnect sensor bracket harness connector.

   b. Loosen the two (2) Phillips head screws which secure bracket assembly to dryer and remove bracket from dryer.



NOTE: ***DO NOT*** remove screws.

4. Disassemble sensor probe from bracket assembly by removing the top push-on fastener securing the probe from bracket. Use a small screwdriver to slowly pry the fastener off.

5. Disconnect the two (2) "orange" wires from the high heat (225° F [107° C]) thermostat, and remove modular bracket connector, wires, and probe from bracket assembly.

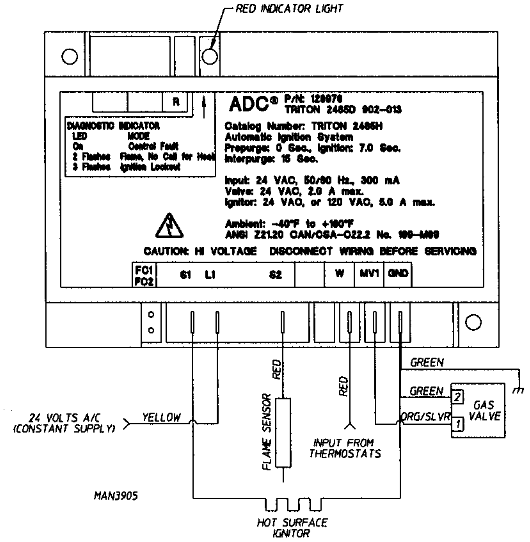
6. Install new sensor probe assembly (**ADC** P/N 880252) by reversing procedure.

7. Reestablish electrical power to the dryer.

NOTE: If, when electrical power is reestablished, the computer display reads "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE," check for a loose connection in the wiring.

B. IGNITION CONTROLS

Hot Surface Ignition Module Replacement
(refer to burner illustration on **page 11**)



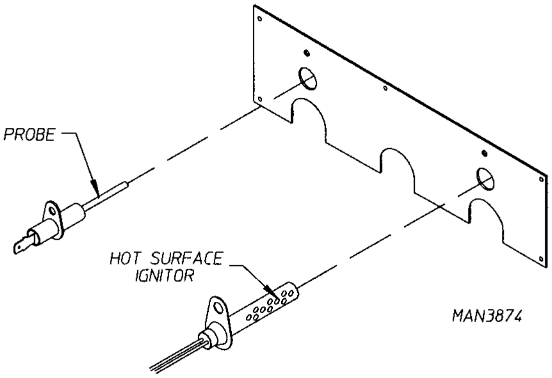
RED INDICATOR LIGHT
R
ADC® P/N: 128978
TRITON 2465D 902-013
DIAGNOSTIC INDICATOR
LED MODE
On Control Fault
2 Flashes Flame, No Call for Heat
3 Flashes Ignition Lockout
Catalog Number: TRITON 2465H
Automatic Ignition System
Prepurge: 0 Sec., Ignition: 7.0 Sec.
Interpurge: 15 Sec.
Input: 24 VAC, 50/60 Hz., 300 mA
Valve: 24 VAC, 2.0 A max.
Ignitor: 24 VAC, or 120 VAC, 5.0 A max.
Ambient: -40°F to +160°F
ANSI Z21.20 CAN/CSA-C22.2 No. 199-M89
CAUTION: HI VOLTAGE DISCONNECT WIRING BEFORE SERVICING
FC1
FC2
S1
L1
S2
W
MV1
GND
GREEN
GREEN
ORG/SLVR
2
1
GAS VALVE
RED
RED
24 VOLTS A/C (CONSTANT SUPPLY)
YELLOW
FLAME SENSOR
INPUT FROM THERMOSTATS
MAN3905
HOT SURFACE IGNITOR

1. Discontinue electrical power to the dryer.
2. Disconnect wire from S1 and GND on the HSI (Hot Surface Ignition) module.
3. Disassemble ignitor from burner by removing the one (1) self tapping screw.
4. Reverse procedure for installation of new ignitor.

NOTE: Before reestablishing electrical power to the dryer visually check the following (refer to illustration above).

5. Reestablish procedure for installation of new ignitor.

Flame Sensor Probe Replacement



FLAME PROBE
HOT SURFACE IGNITOR
MAN3874

1. Discontinue electrical power to the dryer.
2. Disconnect the "red" wire from the flame sensor probe which goes to S2 on the HSI (Hot Surface Ignition) module.
3. Disassemble flame sensor probe from burner by removing the one (1) self tapping screw.
4. Reverse procedure for installation of new flame sensor probe.

NOTE: Before reestablishing electrical power to the dryer visually check the following (refer to illustration above).

5. Reestablish procedure for installation of new ignitor.

Hot Surface Ignitor Flame Sensor Probe

1. Disconnect electrical power to the dryer.
2. Disconnect the hot surface ignitor wires S1 and ground (GND) on the HSI (Hot Surface Ignition) Module.
3. Disasemble Hot Surface Ignitor Probe from the burner by removing the one (1) self tapping screw.
4. Reverse procedure for installation of new hot surface ignitor.

NOTE: Before reestablishing electrical power to the dryer visually check the following (refer to illustration above).

NOTE: *DO NOT WRAP THE HOT SURFACE IGNITOR WIRES AND THE FLAME ELECTRODE WIRE TOGETHER. IMPROPER OPERATION MAY RESULT. THEY MAY RUN ALONGSIDE EACH OTHER.*

5. Reestablish procedure for installation of new ignitor.

Gas Valve Replacement (Refer to burner illustration on **page 11**)

1. Discontinue electrical power to the dryer.
2. Close shut-off valves in gas supply line.
3. Disconnect gas valve wiring.

NOTE: Identify location of each wire for correct reinstallation.

4. Unscrew (break) union connection before gas valve.
5. Loosen and remove four (4) screws securing pipe brackets to burner.
6. Remove valve and manifold assembly from dryer.
7. Remove valve mounting bracket, manifold and piping from gas valve.
8. Reverse procedure for installing new gas valve.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

Main Burner Orifices Replacement

1. Refer to "To Replace Gas Valve" and follow ***Step #1 through Step #6.***
2. Unscrew main burner orifices and replace.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

3. Reverse the removal procedure for reinstalling.

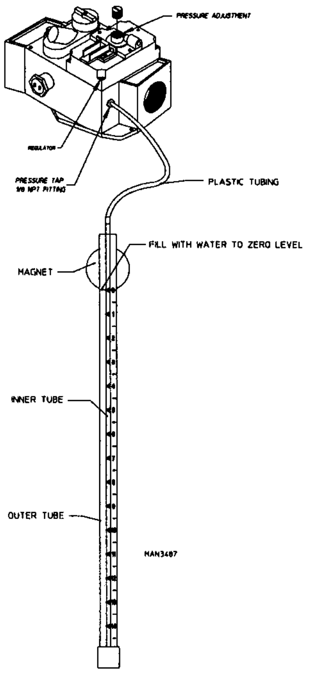
WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Test and Adjust Gas (Water Column) Pressure

There are two (2) types of devices commonly used to measure column pressure. They are spring and mechanical-type gauges and manometers. The spring and mechanical-type gauge is not recommended, because it is easily damaged and not always accurate. A manometer is simply a glass or transparent plastic tube with a scale in inches. When filled with water and pressure applied, the water in the tube rises showing the exact water column pressure.

NOTE: Manometers are available from the factory by ordering **ADC** P/N 122804.



1. To test gas water column (W.C.) Pressure:

   a. Connect water column test gauge connection to gas valve pressure tap (1/8" NPT). This pressure tap is located on the outlet (manifold) side of the valve.

   b. Start dryer. With burner on, the correct water column reading in inches would be:
      Natural Gas - 3.5 Inches Water Column (8.7 mb).
      L.P. Gas - 10.5 Inches Water Column (26.1 mb).

2. To adjust water column pressure (natural gas only, L.P. gas **must be** regulated at source):

   a. Remove the slotted vent cap on the top of the valve.

   b. Turn the slotted adjustment screw located on the top of the valve next to the terminals. Turn clockwise (CW) to increase manifold pressure and counterclockwise (CCW) to decrease.

NOTE: If correct W.C. pressure **cannot** be achieved, problems may be due to an undersized gas supply line, a faulty or underrated gas meter, etc.

To Convert Natural Gas to L.P. Gas

NOTE: **ALL** dryers are sold as natural gas, unless otherwise specified at the time the dryer order was placed. For L.P. gas the dryer ***must be*** converted as follows.

1. Refer to "Replace Gas Valve" and follow ***Step #1 through Step #6***.

   a. For models with 3/4" White-Rodgers valve.

      1) Remove top vent cap.

      2) Insert spring and pin.

      3) Replace vent cap.

2. Unscrew main burner orifices and replace with L.P. orifices.

NOTE: Use extreme care when removing orifices. They are made of brass and are easily damaged.

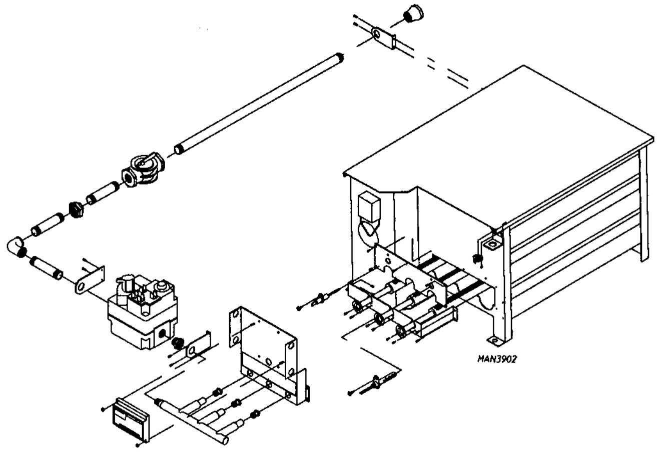
3. Reverse the procedure for reinstalling valve assembly to the dryer.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

NOTE: There is no regulator provided in an L.P. dryer. The column pressure ***must be*** regulated at the source (L.P. tank) or an external regulator ***must be*** added to each dryer.

Burner Tubes Replacement

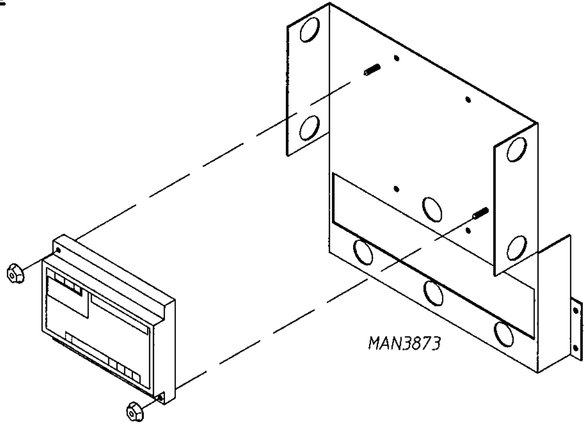


1. Refer to "Replace Gas Valve" and follow ***Step #1 through Step #6.***
2. Remove four (4) screws securing the HSI (Hot Surface Ignition) module mounting bracket.
3. Remove front flanges of the burner tubes to the burner tube rest.
4. Remove the screws securing the burner tube rest to the oven and remove this rest.
5. Remove screws securing burner box cover plate to the oven and remove the cover.
6. Remove burner tubes by sliding them out.
7. Replace by reversing procedure.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

HSI (Hot Surface Ignition) Module Replacement



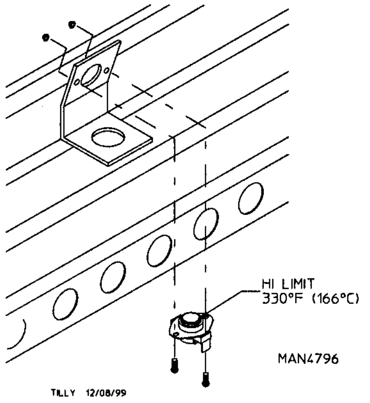
1. Discontinue electrical power to the dryer.
2. Remove the wires connected to the terminal strip at the bottom of the module. (Mark correct location of each wire to aid in replacement on new module).
3. Remove the four (4) pal nuts securing the module to the mounting bracket.
4. Replace module by reversing procedure.
5. Reestablish electrical power to the dryer.

C. MANUAL RESET BURNER HI-LIMIT (330° F [166° C]) THERMOSTAT REPLACEMENT (Gas Models Only)

1. This thermostat is an important safety device as an added protection against failure of the airflow (sail switch) to open in the event of motor failure or reduced airflow conditions.

IMPORTANT: **UNDER NO CIRCUMSTANCES** should heat circuit safety devices ever be disabled.

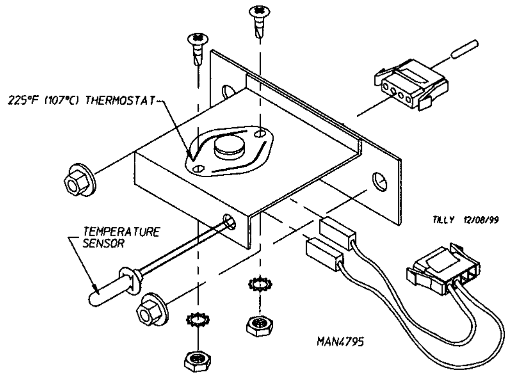
NOTE: Models manufactured as of 1998 are equipped with a manual reset hi-limit thermostat.



1. Discontinue electrical power to the dryer.
2. Disconnect wires from hi-limit thermostat.
3. Remove the two (2) screws, washers and nuts securing thermostat to the bracket. Remove thermostat.
4. Reversing procedure for installing new thermostat.
5. Reestablish electrical power to dryer.

Manual Reset Tumbler Hi-Limit (225° F [107° C]) Thermostat Replacement

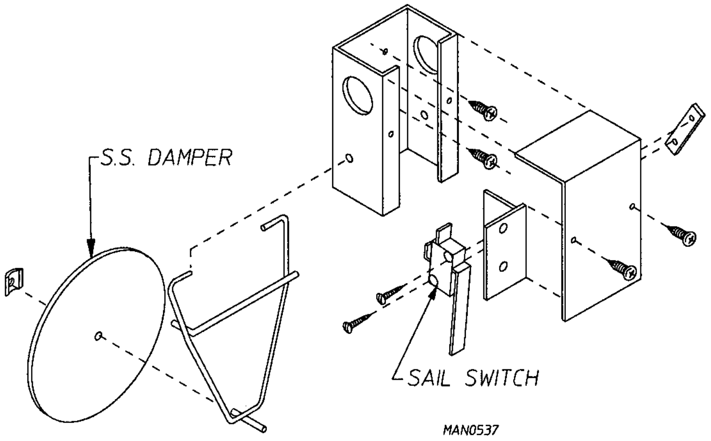
This thermostat is part of the "sensor bracket assembly" and is secured to the underside of the basket wrapper in the lint compartment. As a safety device, this thermostat will open (shut off) the heating unit circuit if an excessive temperature occurs. The dryer motor will remain on, even if the thermostat is open.



1. Disconnect electrical power to the dryer.
2. Open lint door.
3. Locate sensor bracket assembly. Remove the two (2) bolts securing bracket assembly to the tumbler (basket) wrapper.
4. Disconnect sensor bracket harness connector and remove bracket assembly from dryer.
5. Disconnect the two (2) "orange" wires from the thermostat.
6. Disassemble thermostat from bracket assembly by removing the two (2) mounting screws, washers and nuts.
7. Reverse this procedure for installing a hi-heat protector thermostat.
8. Reestablish electrical power to the dryer.

D. SAIL SWITCH ASSEMBLY (Gas

The sail switch is a heat circuit safety device which controls the burner circuit only. When the dryer is operating and there is proper airflow, the sail switch damper pulls in and closes the sail switch. Providing **ALL** the other heat-related circuits are functioning properly, ignition should now be established. If an improper airflow occurs, the sail switch damper will release, and the circuit will open.



Sail Switch Replacement

1. Discontinue electrical power to the dryer.
2. Remove the two (2) screws which hold the sail switch box cover to sail switch box.
3. Disconnect the two (2) wires from the switch.
4. Disassemble sail switch from mounting bracket by removing the two (2) screws securing switch in place.
5. Reverse this procedure for installing new sail switch. Adjust sail switch as described in the next section.

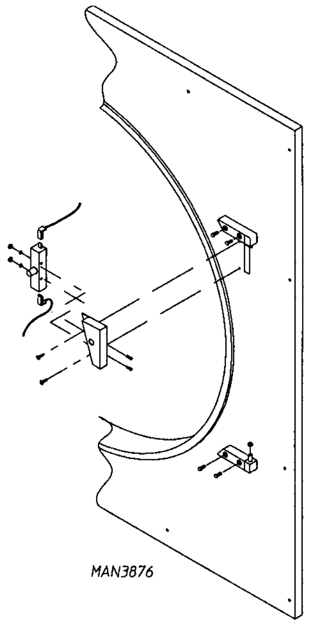
To Adjust Sail Switch

With the dryer operating at a high temperature setting, pull the sail switch away from the burner. The sail switch should open and extinguish the burner. The dryer will continue to run for 3-minutes or until 100° F (38° C) is reached. The computer will display "no airflow." If the sail switch circuit does not operate as described, bend the actuator arm of the sail switch accordingly until proper operation is achieved. To check proper "open" position of sail switch, open main door, manually depress main door switch and start dryer. With the main door open and the dryer operating, the sail switch **should be** open, and the burner should not come on.

E. FRONT PANEL and MAIN DOOR ASSEMBLIES

Main Door Switch Replacement

1. Discontinue electrical power to the dryer.
2. Open main door.
3. Remove the two (2) Phillips head screws holding the main door switch bracket assembly in place.
4. Disconnect wiring from switch assembly.
5. Remove the two screws which secure the switch to the housing.
6. Reverse this procedure for installing new door switch assembly.
7. Reestablish electrical power to the dryer.



CURRENT PRODUCTION

IMPORTANT: **UNDER NO CIRCUMSTANCES** should the door switch be disabled.

Main Door Assembly Replacement

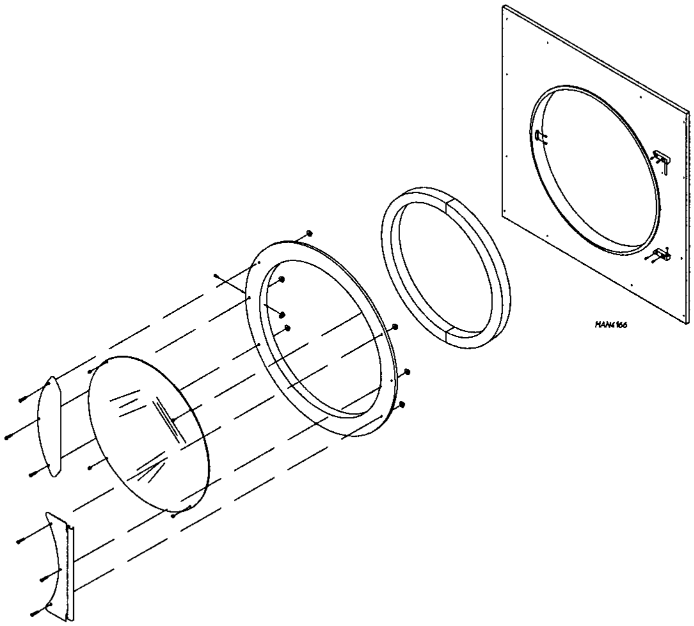
1. Open main door.
2. Holding the door upward remove the two (2) screws from the top hinge block.
3. Lift the door up to remove.
4. Reverse this procedure for reinstalling new main door assembly.

To Install New Main Door Glass

1. Remove main door assembly from dryer (follow main door removal procedure).
2. Lay main door on flat surface with the back of the door facing down.
3. Remove the four (4) #10-32 acorn nuts securing the glass to the door.
4. Remove glass and clean ALL old sealant off main door. This area **must be** clean for correct bonding.
5. Place a bead of silicone (**ADC** P/N 170730) around the edge door and lightly press glass into place.
6. Reinstall the four (4) #10-32 acorn nuts that were removed in ***Step #3***.

IMPORTANT: ***DO NOT*** press hard or silicone thickness between the glass and door will be reduced, resulting in poor bonding.

7. The door assembly should now be put in an area where it will not be disturbed for at least 24 hours. Depending on the conditions, the curing time of this adhesive is 24 to 36 hours.
8. After the curing period, install main door on dryer by reversing ***Step #1***.



Front Panel Replacement

1. Discontinue electrical power to the dryer.
2. Remove bottom lint drawer assembly.
3. Remove the screws securing the front panel to the dryer.
4. Disconnect the two (2) door switch wires located behind the front panel.
5. Remove the front panel.

IMPORTANT: When pulling the front panel off, the door switch harness in the upper right hand corner ***must be*** unplugged.

NOTE: The main door assembly can be removed to make the panel removal easier. Refer to "Replace Main Door Assembly" directions.

6. Reinstall the new front panel by reversing ***Step #1 through Step #4***.
7. Reestablish electrical power to the dryer.

Main Door Hinge Block Replacement

1. Discontinue electrical power to the dryer.
2. Follow procedure for removal of main door assembly for top hinge removal.
3. Remove the two screws from the bottom hinge block.
4. Reassemble by reversing removal procedure.
5. Reestablish electrical power to the dryer.

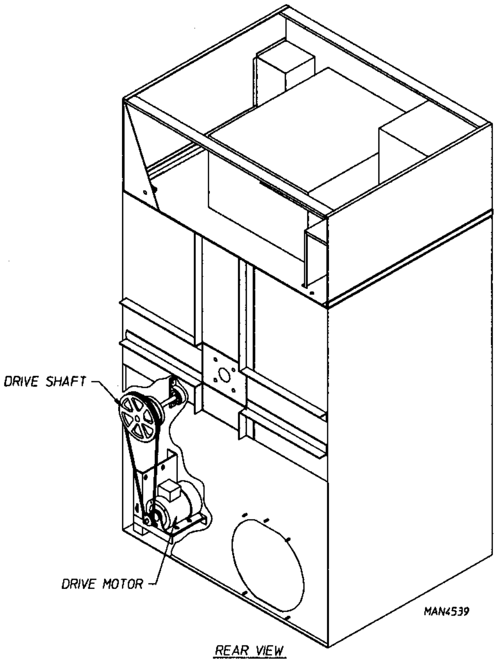
F. DRIVE SHAFT PULLEY REPLACEMENT

1. Discontinue electrical power to the dryer.
2. Remove front panel from dryer (Follow front panel replacement directions on **page 24**.)
3. Loosen V-belts. Rotate pulley and roll V-belts out of grooves.
4. Remove set screw from the 9” (22.86 cm) pulley.
5. Remove pulley and key.

NOTE: A gear puller may be required to remove pulley.

6. Reverse this procedure for replacement.

NOTE: Pulley ***must be*** aligned for proper operation.


DRIVE SHAFT
DRIVE MOTOR
MAN4539
REAR VIEW

Drive Motor Pulley Replacement

1. Discontinue electrical power to the dryer.
2. Remove front panel from the dryer. (Follow front panel replacement directions on **page 24**).
3. Loosen V-belts. Rotate pulley and roll V-belt out of groove.
4. Remove set screw from the drive motor pulley.
5. Remove pulley and key.

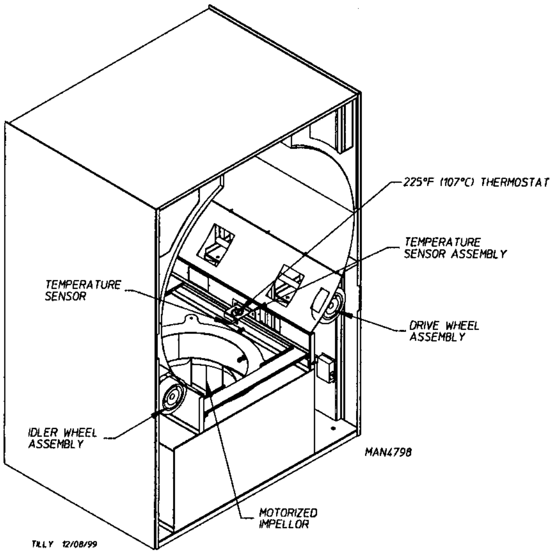
NOTE: A gear puller may be required to remove pulley.

6. Reverse this procedure for replacement.

NOTE: Pulleys ***must be*** aligned for proper operation.

G. TUMBLER WHEEL REPLACEMENT ON DRIVE ASSEMBLY (Taper Lock Models)

1. Discontinue electrical power to the dryer.
2. Remove front panel from dryer. (Follow front panel replacement directions on **page 24**.)
3. Remove the ten (10) 1/4-20 x 1/4” socket button head screws from the perforated basket side.
4. Remove wrapper assembly.

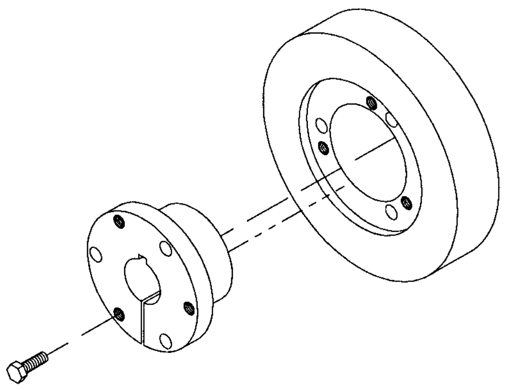

225°F (107°C) THERMOSTAT
TEMPERATURE SENSOR ASSEMBLY
TEMPERATURE SENSOR
DRIVE WHEEL ASSEMBLY
IDLER WHEEL ASSEMBLY
MAN4798
MOTORIZED IMPELLOR
TKLY 12/08/99

5. Loosen V-belts. Rotate pulley and V-belts out of the groove.
6. Block the tumbler (basket) assembly in position.
7. Mark the position of pillow block bearing then remove the bolts from the pillow block bearings.
8. Remove the drive shaft assembly through the front of the machine.
9. Remove the set screw from the 9” (22.86 cm) pulley.
10. Remove the pulley and key.

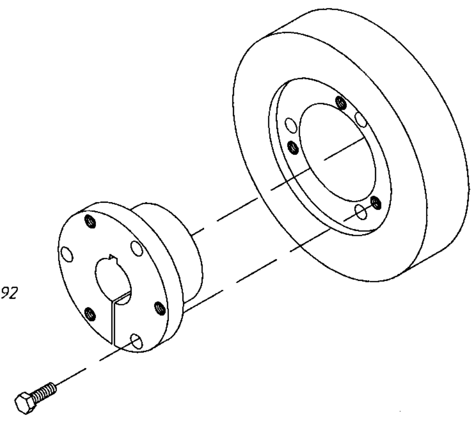
NOTE: A gear pulley may be required to remove the pulley.

11. Remove cap screws from bushing.
12. Insert cap screws in the tapped removal holes and tighten evenly until bushing becomes loose on shaft.
13. Remove the bushing, tumbler wheel, and key.
14. Reverse this procedure for replacement.

TUMBLER WHEEL REMOVAL



TUMBLER WHEEL INSTALLATION



IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8” to 1/4”. Proper cap screw torque is 30 ft-lbs. (41 Nm). If greater tightening forces are applied, excess pressure will be created in the hub of the mounted sheave which may cause it to crack.

H. TUMBLER WHEEL REPLACEMENT ON IDLER ASSEMBLY (Taper Lock Models)

1. Disconnect electrical power to the dryer.
2. Remove the front panel from the dryer. (Follow front panel replacement directions on **page 24**.)

3. Remove the ten (10) 1/4-20 x 1/4" socket button head screws from the perforated basket side.
4. Remove the wrapper assembly.
5. Block the tumbler (basket) assembly in position.
6. Mark the position of the pillow block bearings. Then remove the bolts from the pillow block bearing.
7. Remove the idler shaft assembly through the front of the machine.
8. Remove the cap screws from bushing.
9. Insert cap screws in the tapped removal holes and tighten evenly until bushing becomes loose on shaft.
10. Remove the bushing, tumbler wheel and key.
11. Reverse this procedure for replacement.

I. BASKET ASSEMBLY

NOTE: Dryer ***must be*** level prior to tumbler (basket) alignment.

1. Discontinue electrical power to the dryer.
2. Remove the perforated tumbler (basket) panel.
3. Remove wrapper panel to access the drive and idler shaft.
4. Place a level on the shafts to verify if level.
5. Measure distance between tumbler (basket) and wrapper 1/2" to 3/4" gap **should be** derived.
6. Loosen the eight (8) bolts on the pillow block bearings and turn the adjustment screw clockwise (CW) or counterclockwise (CCW) to increase or decrease the gap between the tumbler (basket) and wrapper.
7. Measure the length of the adjustment bolts and **ALL should be** equal.
8. Place a level on the shaft to verify it is level if any adjustment has been made.
9. Check the basket drive belt for proper tension. Adjust if necessary.
10. Replace the wrapper panels.
11. Replace the perforated tumbler (basket) panel.

J. 1-15/16 FLANGE BEARING REPLACEMENT

1. Disconnect electrical power to the dryer.
2. Remove the four (4) bolts securing the bearing cap located in the rear of the dryer. And remove.

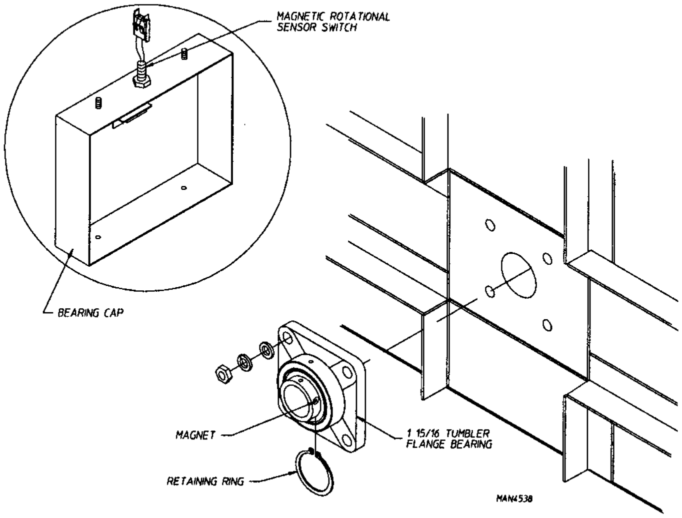
3. Depress the tabs on the rotational sensor harness plug and pull apart.
4. Remove the retaining ring from the tumbler shaft.
5. Remove the four (4) bolts, lock washers and flat washers securing the flange bearing to the dryer cabinet.
6. Loosen the set screws from the flange bearing.
7. Remove the flange bearing from the tumbler shaft.
8. To replace new flange bearing reverse ***Step #2 through Step #8***.
9. Reestablish electrical power to the dryer.

K. ROTATIONAL SENSOR ASSEMBLY

The Rotational Sensor Assembly is located in the rear of the dryer. It consists of a magnet which rotational switch, mounted to the bearing cap is riveted to the 1-15/16 (5 cm) Flange Bearing.

The magnetic rotational sensor switch senses the rotation of the tumbler (basket). If the gap between the sensor switch and the magnet is greater than a preset amount, then the dryer will shut down on "SEFL" ("rotational sensor failure").

1. To Replace Rotational Sensor Switch.
    a. Discontinue electrical power to the dryer.
    b. Remove the bearing cap from the dryer.
    c. Remove the adjustment nut from the bearing cap.
    d. Remove the magnetic rotational sensor switch from the bearing cap.
    e. Depress the tabs on the rotational sensor harness plug and pull apart, then remove the sensor switch.
    f. To install a new sensor switch, connect the plug of the new sensor switch to the sensor harness.
    g. Place one (1) adjustment nut onto the sensor switch and insert into the bearing cap.
    h. Place the second adjustment nut on but **DO NOT TIGHTEN**. The magnet on the Flange Bearing and the sensor switch **must be** in a horizontal line to one another.
    i. The gap between the magnet and the sensor switch **must be** 1/8-inch.
    j. Tighten the adjustment nuts installed in ***Step #6 and Step #7***.
    k. Reestablish electrical power to the dryer.


MAGNETIC ROTATIONAL SENSOR SWITCH
BEARING CAP
MAGNET
RETAINING RING
1 15/16 TUMBLER FLANGE BEARING
MAN4538

L. IDLER SHAFT PILLOW BLOCK BEARING REPLACEMENT

1. Refer to tumbler wheel replacement on idler assembly **page 26**.
2. Complete ***Step #1 through Step #11***.
3. Remove both set screws from each pillow block bearing.
4. Remove pillow block bearing from shaft.
5. Reverse this procedure for replacement.

NOTE: Once the shaft assembly has been installed into dryer. Return pillow block bearings to the marked position and tighten set screws.

6. Refer to basket assembly section **page 27** for shaft and basket alignment.

M. DRIVE SHAFT PILLOW BLOCK BEARING REPLACEMENT

1. Refer to tumbler wheel replacement on drive assembly **page 25**.
2. Complete ***Step #1 through Step #14***.
3. Remove both set screws from each pillow block bearing.
4. Remove pillow block bearings from shaft.
5. Reverse this procedure for replacement.

NOTE: Once the shaft assembly has been installed into dryer. Return pillow block bearing to the marked position and tighten set screws.

6. Refer to basket assembly section **page 27** for shaft and basket alignment.

N. V-BELT ADJUSTMENT (Motor to Drive Axle)

1. Discontinue electrical power to the dryer.
2. Remove the belt guard cover from the rear of the dryer.
3. Loosen the four (4) bolts holding the drive motor mount to the side of the dryer.
4. Loosen the jam nuts on the adjustment screw on the top of the motor mount.
5. Turn the adjustment screw to lower the motor mount (to tighten the belts) or raise the motor mount (to loosen the belts.)
6. Check the vertical plane of the motor and idler pulleys for parallel adjustment.
7. If realignment is required, loosen motor pulley and bushing, and move motor pulley to proper position.

8. Retighten motor mount bolts and jam nuts.

9. Assemble front panel lint door assemblies back to dryer.

10. Reestablish electrical power to the dryer.

Drive Motor V-Belts Replacement

1. Discontinue electrical power to the dryer.

2. Remove the belt guard cover from the rear of the dryer.

3. Loosen tension on V-belt so that it can easily be rolled off pulley. This can be done by loosening the four (4) bolts holding the motor to the side of the dryer, as well as the adjustment bolt on top.

4. Replace V-belt.

5. Retighten V-belt and adjust tension and alignment per previous instructions.

O. MOTORS

Drive Motor Replacement

1. Discontinue electrical power to the dryer.

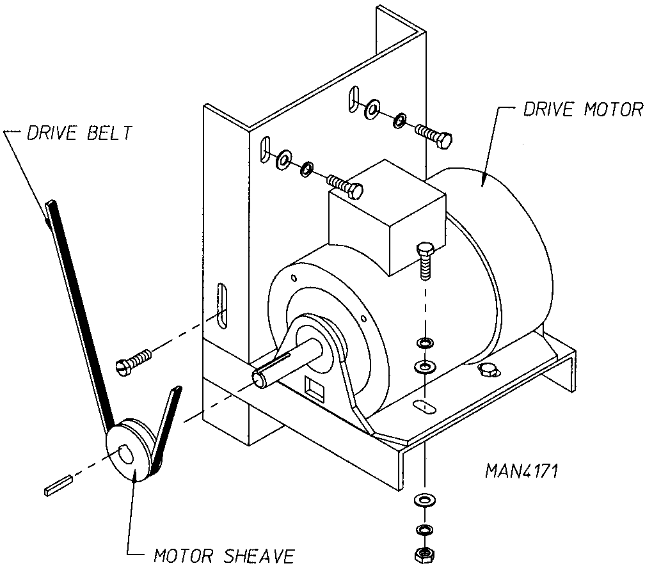
2. Remove the belt guard cover from the rear of the dryer.

3. Remove drive belt.

4. Disconnect wiring harness from motor.

5. Remove bolts holding motor to mount and replace with new motor. **DO NOT TIGHTEN BOLTS.**

6. Remove pulley from old motor and install on new motor. By removing the set screw from the drive motor pulley.



NOTE: A gear puller may be required to remove pulley.

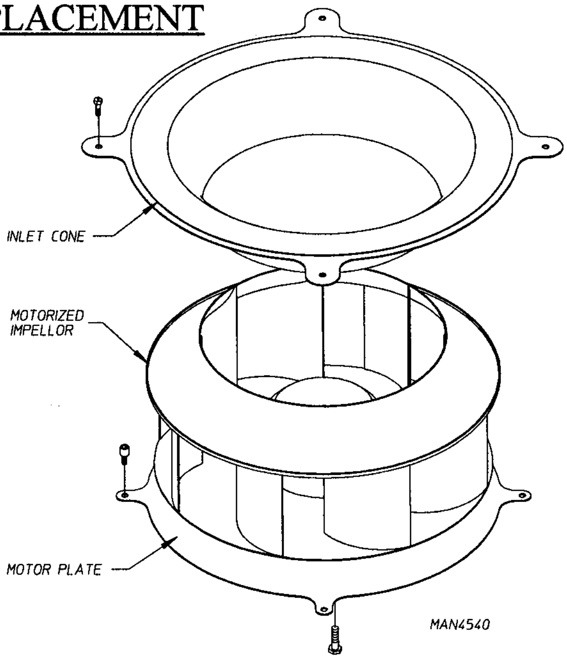
7. Align motor pulley with drive assembly pulley and tighten set screw holding motor pulley.

8. Replace belts and adjust belt tension.

9. Retighten bolts.

10. Reestablish electrical power to the dryer.

P. MOTORIZED IMPELLOR (BLOWER) REPLACEMENT

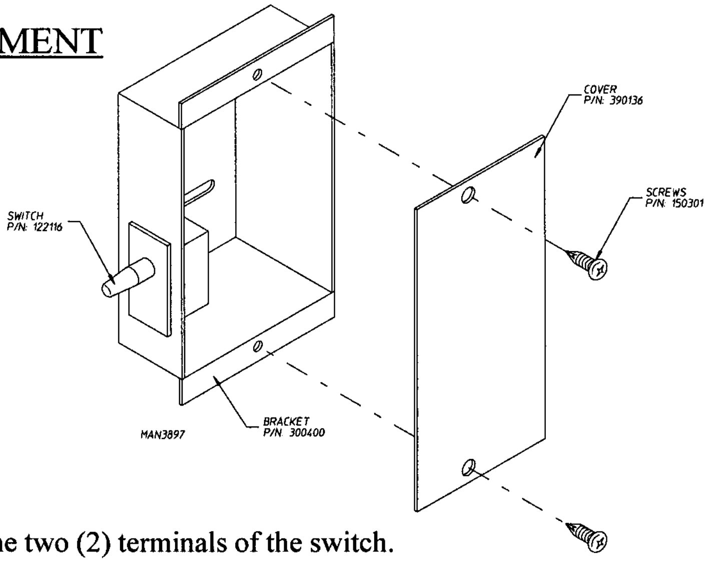


1. Discontinue electrical power to the dryer.
2. Remove lint draw.
3. Remove the perforated panel inside the tumbler (basket).
4. Remove the bolts securing the inlet cone.
5. Remove the inlet cone.
6. Remove the bolts securing the motor plate to the dryer cabinet.
7. Remove the motorized impellor along with the motor plate.

NOTE: The motorized impellor assembly **will not be** able to be removed due to the wiring harness still connected.

8. Disconnect the wiring harness from motor.
9. Remove the motor plate from the motorized impellor and install it on the new motor.
10. Reconnect the wiring harness to the motor.
11. To replace new motorized impellor assembly, reverse ***Step #10 through Step #2***.
12. Reestablish electrical power to the dryer.

Q. LINT DOOR SWITCH REPLACEMENT



1. Disconnect electrical power to the dryer.
2. Remove the lint door panel.
3. Remove the front panel.
4. Disconnect both 4-pin connectors at the rear of the lint switch cover.
5. Remove the two (2) screws holding the lint switch cover on.
6. Remove the lint switch cover and disconnect the two (2) terminals of the switch.
7. Remove switch by pressing tabs together and pushing switch out.
8. Install new lint door switch by reversing these procedures.

SECTION VI

TROUBLESHOOTING

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

The information provided will help isolate the most probable component(s) associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken/shorted wire may be at fault where electrical components are concerned...and not necessarily the suspected component itself.

IMPORTANT: When replacing blown fuses, the replacement ***must be*** of the exact rating as the fuse being replaced. The information provided ***should not be*** misconstrued as a handbook for use by an untrained person in making repairs.

WARNING: ALL SERVICE and TROUBLESHOOTING *SHOULD BE* PERFORMED BY A QUALIFIED PROFESSIONAL or SERVICE AGENCY.

WARNING: WHILE MAKING REPAIRS, OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE DRYER or SPECIFIED IN THIS MANUAL.

A. No L.E.D. (light emitting diode) display on microprocessor controller (computer)...

1. Open circuit breaker switch or blown fuse.
2. Tripped blower motor overload.
3. Faulty wiring connection.
4. Faulty transformer.
5. “EMERGENCY STOP” (E-Stop) button is depressed.
6. Faulty microprocessor controller (computer).

B. Computer will not accept keypad (touchpad) entries...

1. Keypad (touchpad) ribbon is not plugged into computer securely.
2. Faulty keypad (touchpad).
3. Faulty microprocessor controller (computer).

C. Dryer will not start, but computer L.E.D. (light emitting diode) indicators are on...

1. Failed contactors.
2. Failed arc suppressor (A.S.) board.
3. Failed microprocessor controller (computer).
4. Failed motors.

D. Drive motor runs, burner is on, but tumbler (basket) will not turn...

1. Broken, damaged or loose V-belt.
2. Belts contaminated (oil, grease, etc.).
3. Loose or broken pulley.

E. Dryer operates but is taking too long to dry...

1. Improperly programmed microprocessor controller (computer).
2. An inadequate exhaust duct work system.
3. Restriction in exhaust system.
4. Insufficient make-up air.
5. Poor housekeeping.
    a. Dirty or clogged lint screen.
6. Washing machine extractors are not performing properly.
7. An exceptionally cold/humid or low barometric pressure atmosphere.
8. The supply gas may have a low heating valve, check with local gas supplier.
9. Failed temperature sensor (temperature calibration is incorrect).
10. Failed microprocessor controller (computer).

F. Thermal overload for drive motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Motor vents are blocked with lint.
4. Failed motor.
5. Failed overload.
6. Out of balance impellor (fan).
7. Insufficient make-up air.

G. Overload for impellor (fan) motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Motor vents are blocked with lint.
4. Failed motor.
5. Failed overload.
6. Insufficient make-up air.

H. Burner hi-limit safety thermostat is tripping...

1. Insufficient exhaust duct work, size or restriction in exhaust system.
2. Insufficient make-up air.
3. Lint screen needs cleaning.
4. Damaged impellor (fan).

NOTE: For models with the manual reset hi-limit thermostat refer to **page 20**.

I. L.E.D. (light emitting diode) display reads "Temp Sensor Failure Check Temp Sensor Fuse." Dryer Sensor Circuit Failure...

1. Check 1/8-amp fuse on microprocessor controller (computer).
2. Faulty microprocessor temperature sensor probe.
3. Open circuit in either one of two (2) wires leading from the sensor probe to the computer...
   a. Connection at sensor bracket assembly connector.
   b. Connection at computer harness connector.
4. Faulty microprocessor controller (computer).

J. Dryer does not start. Display reads "main door" or "lint door" with an audio indication...

1. Main door is open.
2. Lint drawer is open.
3. Faulty main door or lint door switch.
4. Open circuit in either main door or lint drawer switch harnesses.
5. Faulty 24 VAC transformer.

K. There is excessive vibration coming from the tumbler (basket)...

1. Tumbler (basket) is out of adjustment.
2. Drive shaft or idler shaft is out of alignment.
3. Faulty pillow block bearing.
4. Faulty tumbler wheel.
5. Drive motor and shaft not aligned.

SECTION VII

PHASE 6 OPL SYSTEM DIAGNOSTICS

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

ALL major circuits, including door, microprocessor temperature sensor, heat and motor circuits are monitored. The Phase 6 OPL microprocessor controller (computer) will inform the user, via the L.E.D. (light emitting diode) display of certain failure codes, along with indicators both in L.E.D. (light emitting diode) display and at the output of each relay (and door switch circuit) to easily identify failures.

A. DIAGNOSTIC (L.E.D. [Light Emitting Diode] DISPLAY) FAILURE CODES

1. **SAIL SWITCH FAIL-** This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is closed prior to start up the display will read "SAIL SWITCH FAIL" along with an audio indication.

2. **No AIRFLOW-** If the sail switch opens during cycle operation the display will read "No AIRFLOW" along with an audio indication. The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "No AIRFLOW" with an audio indication.

3. **bURNER SAFETY FAIL-** Routine monitors the temperature above the burner. If the burner hi-limit switch opens the display will read "bURNER SAFETY FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "bURNER SAFETY FAIL" with an audio indication.

4. **dRUM SAFETY FAIL-** This routine monitors the tumbler (basket) temperature if the tumbler (basket) hi-limit switch opens prior or during the cycle while the heat was on the machine will display "dRUM SAFETY FAIL." The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "dRUM SAFETY FAIL" with an audio indication.

5. **No HEAT-** This routine monitors the burner ignition. If the burner mis-ignites (does not light) the HSI (Hot Surface Ignition) module will check to see of the microprocessor program has any retries left. The standard retry count is two (2). If the module notices that there are retries left it will purge for one (1) minute then try to ignite the burner again. The HSI (Hot Surface Ignition) module will try this for a total of three (3) times or until there are no retries left. If the burner does not ignite after three (3) attempts the L.E.D. display will display the error code "no heat" with an audio indication. When this occurs the machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C).

IMPORTANT: For other countries, such as Australia, the retry count *may not* apply due to local approvals.

6. **bURNER CONTROL FAIL-** This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the Phase 6 microprocessor controller (computer) determines the ignition control has failed. If this occurs when the cycle is active the machine will display "bURNER CONTROL FAIL." If the tumbler temperature is above 100° F (38° C) the machine will continue to display "bURNER CONTROL FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler temperature is below 100° F (38° C) upon failure the machine will shut down and display "bURNER CONTROL FAIL" with an audio indication.

7. **bURNER FLAME FAIL-** This routine allows two (2) flame out retries to occur before proceeding into the error. The count of two (2) will be established every time the call for heat was to occur. Only if it reaches the count of two (2) before the tumbler temperature has reached the set temperature will this error be triggered. The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler temperature is below 100° F (38° C) upon failure, the machine will shut down and display "bURNER FLAME FAIL" with an audio indication. This process will occur every time the heat output is active.

8. **MAIN DOOR-** This monitors the door circuit. If the machine was not active and the main door was opened the display would read "READY." If a program attempt was made with the main doors open the display will read "MAIN dOOR" with an audio indication. If the machine is active and the main door was opened the display would read "MAIN dOOR" with no audio indication and the dryer will shut down. Once the main door has closed the display would read "PRESS START" press the "ENTER/START" key and it will continue the programmed cycle.

9. **LINT dOOR-** This monitors the lint drawer and door circuit. If the machine was not active and the lint drawer and door was opened the display would read "REAdY." If a program attempt was made with the lint drawer and door open the display would read "LINT dOOR" with an audio indication. If the machine is active and the lint drawer and door was opened the display would read "LINT dOOR" with no audio indication and the dryer will shut down. Once the lint door was closed the display would read "PRESS START" press the "ENTER/START" key and it will continue the programmed cycle.

10. **TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE-** This routine monitors the tumbler temperature. When the temperature sensor or fuse opens with the machine not active the display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the machine was active at the time that the temperature sensor or fuse opened the display would read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE." If the tumbler temperature is above 100° F (38° C) the machine will continue to display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication and run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler temperature is below 100° F (38° C) upon failure the machine will shut down and display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. The display will continue to read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" an audio indication will sound for approximately 5 seconds, every 30 seconds until the problem is corrected or the power to the dryer is disconnected (and the problem is corrected).

NOTE: Once the Phase 6 microprocessor controller (computer) detects a problem in the heat circuit, it updates every 30 seconds, so that if the problem was a loose connection in the circuit which corrected itself, the "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" condition would automatically be cancelled and the display will return to "REAdY."

11. **ROTATE SENSOR FAIL-** Indicates a rotational sensor circuit failure meaning that there is a fault somewhere in the tumbler (basket) rotating circuit, or the Phase 6 OPL microprocessor controller (computer) program related to this circuit (program location 2) is set incorrectly. In the active mode it **should be** (ROTATE SENSOR ACTIVE), if the dryer is not equipped with the optional rotational sensor it **should be** set in the nonactive mode (No ROTATE SENSOR).

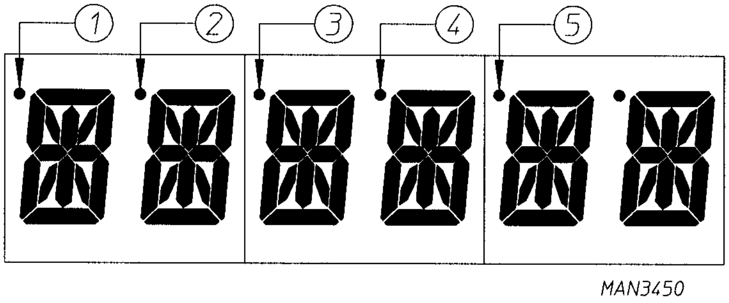
NOTE: **RPM-** This routine monitors the timing response from the existing rotational sensor input and derives a RPM measurement. To display this RPM measurement (press the "ENTER/START" key once and release, then press the "ENTER/START" key a second time and hold. This will display the RPM measurement). The rotational sensor ***must be*** active for operation of this feature.

12. **CHECK MAIN FUSE-** Indicates that the circuit fuse protection which is located on the back side of the Phase 6 microprocessor controller (computer) the display would read "CHECK MAIN FUSE." If the display continues after the fuse has been replaced then it is the fault of the Phase 6 microprocessor controller (computer).

B. L.E.D. (LIGHT EMITTING DIODE) DISPLAY INDICATORS

The L.E.D. (light emitting diode) indicator dots located on the top portion of the display indicates various Phase 6 OPL computer output functions while a cycle is in progress. These indicator dots (as shown in the illustration below) **DO NOT** necessarily mean that the outputs are functioning. They are only indicating that the function output **should be** active (on).

1. **L.E.D. DISPLAY INDICATOR NUMBER 1**



   a. For Optional Reversing Models:

      1) This indicator dot is on when the drive tumbler (basket) motor is operating in the forward mode (clockwise [CW] direction).

2. **L.E.D. DISPLAY INDICATOR NUMBER 2**

   a. For Optional Reversing Models:

      1) This indicator dot is on when the drive (basket [tumbler]) motor is operating in the reverse mode (counterclockwise [CCW] direction).

3. **L.E.D. DISPLAY INDICATOR NUMBER 3**

   a. Heat Circuit Indicator:

      1) This indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating circuit to be active (on).

4. **L.E.D. DISPLAY INDICATOR NUMBER 4**

   a. On Indicator:

      1) This indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle program is active, the indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time program.

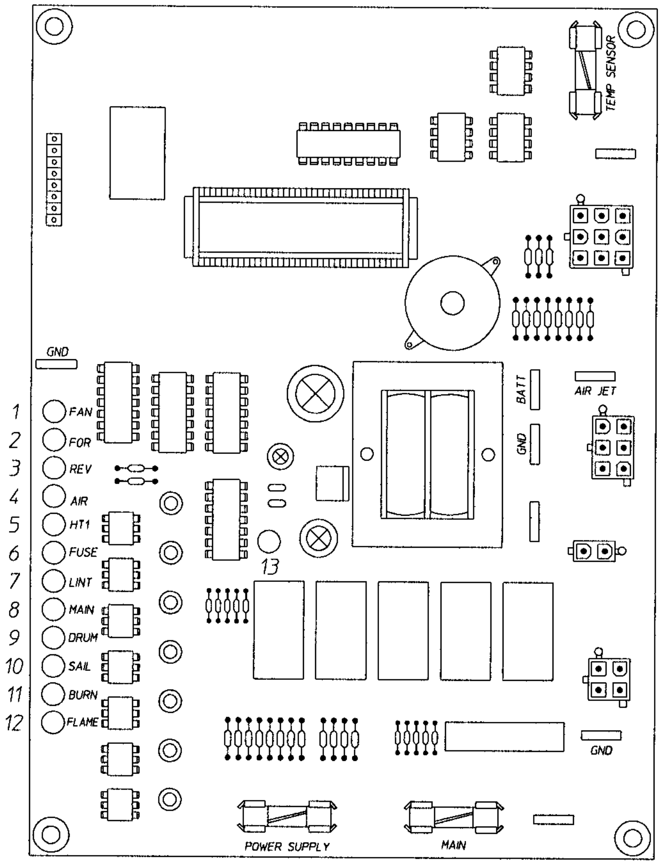
5. **L.E.D. DISPLAY INDICATOR NUMBER 5**

   a. Air Jet Circuit - ***OPTIONAL***

      1) This indicator dot is on at the end of the dryer cycle for approximately 60 seconds.

C. PHASE 6 OPL MICROPROCESSOR CONTROLLER (COMPUTER) RELAY OUTPUT L.E.D. (LIGHT EMITTING DIODE) INDICATORS

There are a series of five (5) L.E.D. (light emitting diode) indicators (ORANGE LIGHTS) located at the backside of the Phase 6 OPL microprocessor controller (computer). These are identified or labeled (from top to bottom in the illustration below as: FAN-BLOWER, FOR-FORWARD, REV-REVERSE, AIR-AIR-JET, HT1-HEAT OUTPUT. There are a series of seven [7] L.E.D. (light emitting diode) indicators [red lights] FUSE-MAIN FUSE, LINT-LINT DOOR, MAIN-MAIN DOOR, DRUM-TUMBLER HI-LIMIT, SAIL-SAIL SWITCH, BURN-BURNER HI LIMIT, FLAME-FLAME PROBE). The L.E.D. (light emitting diode) in the center of the board (red light) indicates power supplied to the Phase 6 OPL microprocessor controller (computer). These L.E.D.'s (light emitting diode) indicate the inputs and outputs of the Phase 6 OPL microprocessor (computer) as it monitors the safety circuits.



MAN3449

1. **"FAN" (BLOWER) Output L.E.D. (light emitting diode) Indicator**

   a. If the dryer is started and the blower motor is not operating, yet the Phase 6 OPL microprocessor controller (computer) display fan indicator dot and power supply input L.E.D. (light emitting diode) are on, but the fan output L.E.D. is off, then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

      1) If the motor is not operating. The fan indicator dot and output L.E.D. (light emitting diode) are also on, then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

2. **"FOR" (FORWARD) Output L.E.D. (light emitting diode) Indicator (for optional reversing model ONLY)**

   a. If the dryer is started and the blower motor is operating, but the drive (tumbler/basket) motor is not, yet the Phase 6 OPL microprocessor controller (computer) display "FORWARD" indicator dot is on, the "FOR" (FORWARD) motor output L.E.D. (light emitting diode) is off; then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

      1) If the drive tumbler (basket) motor is not operating and the forward indicator dot and output L.E.D. (light emitting diode) is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

3. **"REV" (REVERSE) Output L.E.D. (light emitting diode) Indicator (for optional reversing models ONLY)**

   a. If the dryer is started and the blower motor is operating but the drive (tumbler and basket) motor is not, yet the Phase 6 OPL microprocessor controller (computer) displays "REVERSE" indicator dot is on but the "REV" (REVERSE) motor output L.E.D. (light emitting diode) is off; then the fault is of the Phase 6 OPL microprocessor controller (computer) itself.

      1) If the drive tumbler (basket) motor is not operating and reverse indicator dot and output L.E.D. (light emitting diode) is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

4. **"AIR" (AIR JET) Output L.E.D. (light emitting diode) Indicator - *OPTIONAL***

   a. "AIR" is on with the display dot at the end of the dry cycle once the display reads "dONE," it is on for approximately 60-seconds and the output L.E.D. (light emitting diode) indicator and the display dot go out. If the air jet **DOES NOT** energize it is not the fault of the Phase 6 OPL microprocessor controller (computer). If the output L.E.D. (light emitting diode) or dot **DO NOT** go on it is the fault of the Phase 6 OPL microprocessor controller (computer).

5. **"HT1" (HEAT) Output L.E.D. (light emitting diode) Indicator**

   a. If the dryer is started and there is "No Heat" yet the Phase 6 OPL microprocessor controller (computer) display heat circuit indicator dot is on, but the "HT1" output L.E.D. (light emitting diode) indicator is off; then the fault is in the Phase 6 OPL microprocessor controller (computer) itself.

      1) If the dryer is started and there is "No Heat" yet both the Phase 6 OPL microprocessor controller (computer) display indicator dots and the "HT1" output L.E.D. (light emitting diode) indicator are on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

6. “FUSE” (MAIN FUSE) Input L.E.D. (light emitting diode) Indicator

a. **Should be** on ALL the time (even if the dryer is not running). If the L.E.D. (light emitting diode) is not on; then the display will read “CHECK MAIN FUSE.” If the main fuse is good then the fault is on the Phase 6 microprocessor controller (computer).

7. “LINT” (LINT DOOR) Input L.E.D. (light emitting diode) Indicator

a. **Should be** on ALL the time (unless the lint door is opened then the “LINT” L.E.D. [light emitting diode] indicator will go out).

b. If the dryer is active (running) and the lint door is opened the “LINT” L.E.D. (light emitting diode) indicator will go out and the display will read “LINT dOOR.” The dryer will stop until the Lint Drawer has been closed, at which time the L.E.D. (light emitting diode) display will read “PRESS START.” At this time, to resume the drying cycle press “ENTER/START” key.

8. “MAIN” (MAIN DOOR) Input L.E.D. (light emitting diode) Indicator

a. **Should be** on ALL the time (unless the lint door is open or the main door is opened then the “MAIN” L.E.D. [light emitting diode] indicator will go out).

b. If the dryer is active (running) and the main door is opened the “MAIN” L.E.D. (light emitting diode) indicator will go out and the display will read “MAIN dOOR.” The dryer will stop until the main door has been closed, at which time the L.E.D. (light emitting diode) display will read “PRESS START.” At this time, to resume the drying cycle press “ENTER/START” key.

9. “DRUM” (TUMBLER [BASKET] HI-LIMIT) Input L.E.D. (light emitting diode) Indicator

a. **Should be** on at ALL times (unless the tumbler [basket] hi-limit switch opens prior during the cycle while the heat was on the display would read “dRUM Safety FAIL”). The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying “dRUM SAFETY FAIL” with an audio indication.

10. “SAIL” (SAIL SWITCH) Input L.E.D. (light emitting diode) Indicator

a. This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is in the closed position prior to start, the “SAIL” output L.E.D. (light emitting diode) indicator will be off, the machine will not start and the display will read “SAIL SWITCH FAIL” along with an audio indication.

b. If the sail switch opens during the cycle the “SAIL” output L.E.D. (light emitting diode) will go out and the display will read “NO AIRFLOW.” The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying “NO AIRFLOW” along with an audio indication.

11. “BURN” (BURN HI-LIMIT) Input L.E.D. (light emitting diode) Indicator

a. This routine monitors the temperature of the burner. If the burner hi-limit opens during the cycle while the heat was on the “BURN” output L.E.D. (light emitting diode) indicator goes out and the display reads “bURNER SAFETY FAIL.” The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C) then the machine will shut down still displaying “bURNER SAFETY FAIL” with an audio indication.

12. "FLAME" (bURNER CONTROL FAIL) Input L.E.D. (light emitting diode) Indicator

a. This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the microprocessor determines the ignition control has failed. If this occurs when the cycle is active the "FLAME" output L.E.D. (light emitting diode) indicator will go out and the display will read "bURNER CONTROL FAIL." The machine will run with no heat for three (3) minutes or until the temp drops below 100° F (38° C). Then the machine will shut down still displaying "bURNER CONTROL FAIL" with an audio indication.

13. "POWER SUPPLY" Input L.E.D. (light emitting diode) Indicator

a. **Should be** on at **ALL** times (even if the dryer is not running). The power supply L.E.D. (light emitting diode) output indicator will not be on if the power supply fuse to the Phase 6 OPL microprocessor is not present. If the power supply fuse is faulty the L.E.D. (light emitting diode) output will be off and there will be no display or keypad (touchpad) function. The "FUSE," "LINT," and "DRUM" output L.E.D. (light emitting diode) indicators will remain on.

D. L.E.D. CODES

1. Display Codes

A	SLOPE FACTOR
ALL REV	ALWAYS REVERSING
ANTI WRINKL dELAY TIME	ANTI-WRINKLE DELAY TIME
ANTI WRINKL GUARd ACTIVE	ANTI-WRINKLE PROGRAM ACTIVE
ANTI WRINKL GUARd ON TIME	ANTI-WRINKLE GUARD ON TIME
AUTO CYCLE	AUTOMATIC MODE
b	HEAT LOSS (OFF SET) FACTOR
bURNER CONTROL FAIL	GAS ONLY POWER (24 VAC) IS NOT EVIDENT AT GAS VALVE
bURNER FLAME FAIL	NO BURNER FLAME SENSED
bURNER SAFETY FAIL	GAS/ELECTRIC ONLY BURNER/OVEN OPEN HI-LIMIT CIRCUIT
bUZZ	BUZZER (TONE)
bUZZ TIME	BUZ TIME
CEL	DEGREE IN CELSIUS
CHECK MAIN FUSE	MAIN FUSE FAILURE
CLEAN LINT	PROMPT TO CLEAN LINT SCREEN, DRYER CYCLE LOCKOUT
COOL	COOL DOWN CYCLE IN PROGRESS
COOL TIME_M	COOL DOWN TIME
COOL TEMP_	COOL DOWN TEMPERATURE
CYCLEA	PREPROGRAMMED CYCLE A
CYCLEb	PREPROGRAMMED CYCLE B
CYCLEC	PREPROGRAMMED CYCLE C
CYCLED	PREPROGRAMMED CYCLE D
CYCLEE	PREPROGRAMMED CYCLE E
CYCLEF	PREPROGRAMMED CYCLE F
dONE	DRYING or COOLING CYCLE COMPLETE OR DRYER IN ANTI-WRINKLE MODE
dRYING	DRYING CYCLE IN PROGRESS
dRY LEVEL_	DRYNESS LEVEL (PERCENTAGE OF EXTRACTION) (NUMERICAL VALUE)
dRY TEMP F_	DRYING TEMPERATURE
dRY TIME_M	LENGTH OF DRYING CYCLE
dRUM SAFETY FAIL	TUMBLER HI-LIMIT CIRCUIT IS OPEN
ELAPSE TIME_MIN	CYCLE DISPLAY TIME
ELECTRIC	SPECIFIC HEAT TYPE OR DRYER ELECTRICALLY HEATED
F	FABRIC TEMPERATURE
FAR	DEGREE IN FAHRENHEIT
FLASH	FLASH DISPLAY ACTIVE
GAS	SPECIFIC HEAT TYPE OF DRYER GAS HEATED
HOT	INDICATES AN OVERHEAT CONDITION
LINT dOOR	LINT DRAWER/DOOR CIRCUIT IS OPEN OR FAULT IN THE A.C. SWITCH CIRCUIT
LINT COUNT	DRYING CYCLES RANGE FROM 1-10 CYCLES BEFORE CLEAN LINT DISPLAY
_M REMAIN	CYCLE DISPLAY TIME
MAIN dOOR	DOOR CIRCUIT IS OPEN OR FAULT IN THE A.C. DOOR SWITCH CIRCUIT
MANUAL CYCLE	MANUAL MODE
MAX ANTI WRINKL GUARd	MAXIMUM GUARD TIME
NFLASH	FLASH DISPLAY NOT ACTIVE
NoAIRFLOW	SAIL SWITCH OPEN
NoANTI WRINKL GUARd	ANTI-WRINKLE PROGRAM IS NOT ACTIVE
NoBUZZ	NO BUZZER (TONE)
NoHEAT	GAS ONLY IGNITION ATTEMPT FAILURE
NoREV	NO REVERSE
No ROTATE SENSOR	NO ROTATIONAL SENSOR SELECTED
PROGRAM	PROGRAM MODE
REAdY	NO CYCLE IN PROGRESS
ROTATE SENSOR ACTIVE	ROTATIONAL SENSOR SELECTED
ROTATE SENSOR FAIL	ROTATIONAL SENSOR CIRCUIT FAILURE
_RPM	MONITORS TUMBLER RPM WITH ROTATIONAL SENSOR CIRCUIT ACTIVE
SAIL SWITCH FAIL	GAS/ELECTRIC ONLY ATTEMPT MADE TO START DRYER WITH SAIL SWITCH DISABLED IN CLOSED POSITION
SELREV	SELECT REVERSE
SPIN TIME	SPIN TIME
START GUARd	START ANTI-WRINKLE GUARD CYCLE
STEAM	SPECIFIC HEAT TYPE OR DRYER STEAM HEATED
STOP TIME	STOP TIME
TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE	FAULT IN M.P. HEAT SENSING CIRCUIT

2. Fault Codes

bURNER CONTROL FAIL
- GAS MODELS ONLY POWER (24 VAC) IS NOT EVIDENT AT GAS VALVE

bURNER FLAME FAIL
- The Phase 6 Microprocessor Controller (Computer) **DOES NOT** SENSE FLAME VERIFICATION (GAS MODEL ONLY)

bURNER SAFETY FAIL
- GAS/ELECTRIC ONLY BURNER/OVEN OPEN HI-LIMIT CIRCUIT

dRUM SAFETY FAIL
- Fault in the TUMBLER HI-LIMIT CIRCUIT

HOT
- Indicates an OVERHEAT CONDITION

LINT dOOR
- When the LINT DOOR OR DRAWER is open or there is a **fault** in the LINT DOOR/DRAWER CIRCUIT

MAIN dOOR
- When the MAIN DOOR is open or there is a **fault** in the DOOR CIRCUIT

No AIRFLOW
- **Fault** in the SAIL SWITCH CIRCUIT (GAS/ELECTRIC MODELS ONLY)

No HEAT
- GAS ONLY IGNITION ATTEMPT FAILURE

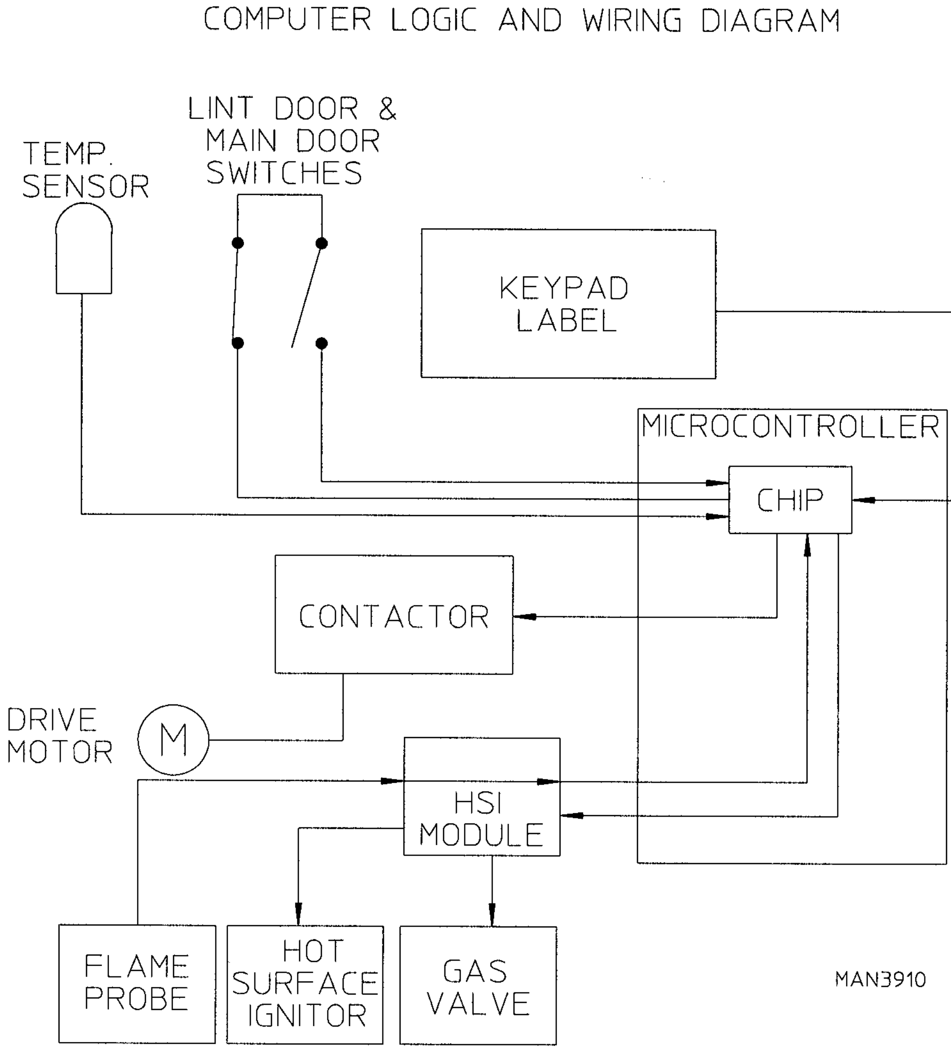
ROTATE SENSOR FAIL
- **Fault** in the ROTATION SENSOR CIRCUIT

SAIL SWITCH FAIL
- **Fault** in the SAIL SWITCH CIRCUIT (GAS/ELECTRIC MODELS ONLY)

TEMP SENSOR CHECK TEMP SENSOR FUSE
- **Fault** in the MICROPROCESSOR TEMPERATURE SENSOR CIRCUIT

E. COMPUTER LOGIC and WIRING DIAGRAM

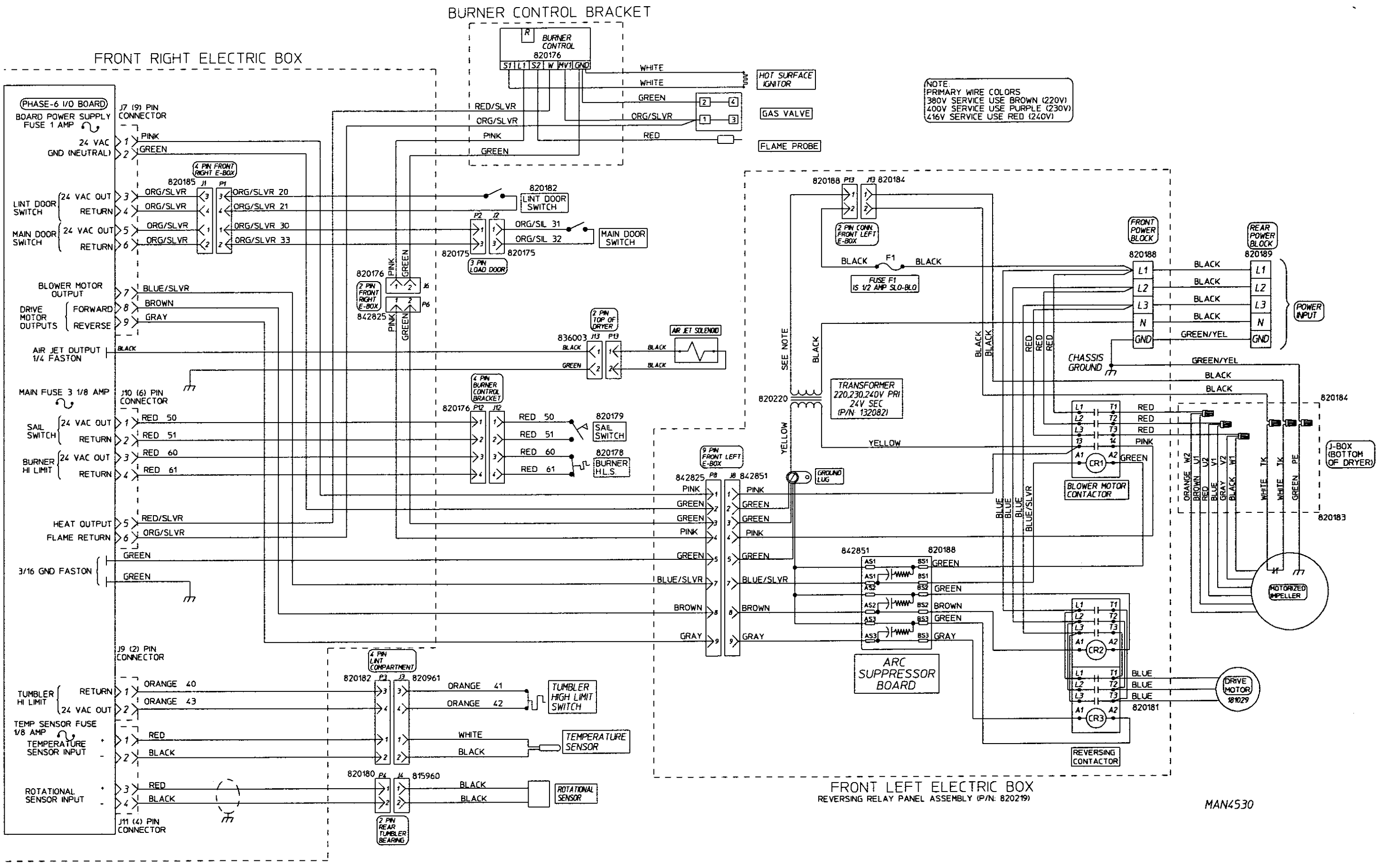
1. Operator enters desired selections.
2. Information entered is sent to the microprocessor via the keyboard (touchpad).


COMPUTER LOGIC AND WIRING DIAGRAM
TEMP. SENSOR
LINT DOOR & MAIN DOOR SWITCHES
KEYPAD LABEL
MICROCONTROLLER
CHIP
CONTACTOR
DRIVE MOTOR
M
HSI MODULE
FLAME PROBE
HOT SURFACE IGNITOR
GAS VALVE
MAN3910

3. The input information is sorted, processed and executed by the microcomputer chip.
4. The microcomputer output signal activates the contactors and HSI (Hot Surface Ignition) module which control machine functions.

NOTE: When contacting **ADC** with electrical questions, please have on hand the correct wiring diagram number for your particular machine. This number is located on the top right-hand corner of the diagram. It is a six (6) digit number followed by a letter to distinguish the revision dates (refer to illustration).

The wiring diagrams used in troubleshooting are specifically for dryers manufactured at the time of publishing. Your particular model may vary slightly depending on the date of manufacturing and options available. The correct wiring diagram and number is either taped to the rear of the control door or each dryer, or placed in the control box. If your particular diagram is lost or unreadable, call **ADC** with the serial number of the dryer. **ADC** will be more than happy to send you a diagram by fax or mail.


BURNER CONTROL BRACKET
FRONT RIGHT ELECTRIC BOX
BURNER CONTROL 820176
R
S1 L1 S2 W MV1 GND
WHITE
WHITE
GREEN
ORG/SLVR
RED
RED/SLVR
ORG/SLVR
PINK
GREEN
HOT SURFACE IGNITOR
GAS VALVE
FLAME PROBE
NOTE
PRIMARY WIRE COLORS
380V SERVICE USE BROWN (220V)
400V SERVICE USE PURPLE (230V)
416V SERVICE USE RED (240V)
PHASE-6 I/O BOARD
BOARD POWER SUPPLY FUSE 1 AMP
J7 (9) PIN CONNECTOR
24 VAC
GND (NEUTRAL)
PINK
GREEN
4 PIN FRONT RIGHT E-BOX
820185 J1 P1
LINT DOOR SWITCH
24 VAC OUT
RETURN
MAIN DOOR SWITCH
ORG/SLVR
ORG/SLVR 20
ORG/SLVR 21
ORG/SLVR 30
ORG/SLVR 33
820182
LINT DOOR SWITCH
P2 J2
ORG/SIL 31
ORG/SIL 32
MAIN DOOR SWITCH
820175
3 PIN LOAD DOOR
BLOWER MOTOR OUTPUT
DRIVE MOTOR OUTPUTS
FORWARD
REVERSE
BLUE/SLVR
BROWN
GRAY
820176
2 PIN FRONT RIGHT E-BOX
842825
J6
P6
PINK
GREEN
2 PIN TOP OF DRYER
836003 J13 P13
AIR JET SOLENOID
AIR JET OUTPUT 1/4 FASTON
BLACK
MAIN FUSE 3 1/8 AMP
J10 (6) PIN CONNECTOR
SAIL SWITCH
BURNER HI LIMIT
RED 50
RED 51
RED 60
RED 61
4 PIN BURNER CONTROL BRACKET
820176 P12 J12
820179
SAIL SWITCH
820178
BURNER H.L.S.
HEAT OUTPUT
FLAME RETURN
RED/SLVR
ORG/SLVR
3/16 GND FASTON
J9 (2) PIN CONNECTOR
TUMBLER HI LIMIT
RETURN
24 VAC OUT
ORANGE 40
ORANGE 43
4 PIN LINT COMPARTMENT
820182 P3 J3 820961
ORANGE 41
ORANGE 42
TUMBLER HIGH LIMIT SWITCH
TEMP SENSOR FUSE 1/8 AMP
TEMPERATURE SENSOR INPUT
WHITE
BLACK
TEMPERATURE SENSOR
ROTATIONAL SENSOR INPUT
820180 P4 J4 815960
ROTATIONAL SENSOR
2 PIN REAR TUMBLER BEARING
J11 (4) PIN CONNECTOR
820188 P13 J13 820184
2 PIN CONN. FRONT LEFT E-BOX
BLACK
F1
FUSE F1 15 1/2 AMP SLO-BLO
SEE NOTE
TRANSFORMER 220,230,240V PRI 24V SEC (P/N 132082)
820220
YELLOW
GROUND LUG
9 PIN FRONT LEFT E-BOX
842825 P8 J8 842851
BLUE/SLVR
FRONT POWER BLOCK
820188
L1 L2 L3 N GND
REAR POWER BLOCK
820189
POWER INPUT
GREEN/YEL
CHASSIS GROUND
820184
J-BOX (BOTTOM OF DRYER)
820183
ORANGE W2
BROWN U1
RED U2
BLUE V1
GRAY V2
BLACK W1
WHITE TK
WHITE TK
GREEN PE
MOTORIZED IMPELLER
T1 T2 T3
CR1
BLOWER MOTOR CONTACTOR
842851
820188
AS1 BS1
AS2 BS2
AS3 BS3
ARC SUPPRESSOR BOARD
CR2
CR3
820181
DRIVE MOTOR 181029
REVERSING CONTACTOR
FRONT LEFT ELECTRIC BOX
REVERSING RELAY PANEL ASSEMBLY (P/N: 820219)
MAN4530

1. No Display Condition

a. Check position of "EMERGENCY STOP" (E-Stop) to verify it is in operating position (pull or twist for operating position).

b. Check fuse one or two and if either are blown, replace.

c. Take voltage reading across the microprocessor (J7) 9-pin connector pins 1 and 2. If no voltage is present at pins 1 and 2, double check the secondary (24 VAC) side of transformer at the blower motor contactor number 13 to ground if no voltage is present check primary voltage to transformer.

d. Check voltage across fuses 1 and 2 to ground. If voltage is present, check "EMERGENCY STOP" (E-Stop) "red" and "black" wire to ground. If voltage is present, check voltage across 95 and 96 to ground of the drive motor overload. If voltage is present, check 95 and 96 to ground of the blower motor overload. If voltage is present and transformer terminations are good, then the transformer is faulty. Refer to the schematic supplied with the dryer to assist in the troubleshooting of the dryer.

NOTE: In this next section ALL voltage checks ***must be*** done in the operating mode with the appropriate microprocessor dot on. Also appropriate L.E.D. (light emitting diode) output light on.

NOTE: In this next section when checking for voltage you are looking for 25 AC volts unless otherwise specified.

2. Drive motor reverses but **DOES NOT** forward, blower motor runs

a. If computer dot (first dot on the left) does not come on replace the computer.

b. Check for voltage across the coil of the forward contactor located in the reversing panel box. The contactor according to your diagram is marked CR2. The coil markings A1 and A2.

If voltage is present, replace reversing contactor.

If voltage is not present, there is a faulty wire or termination between BS2 and contactor coil (CR2).

c. If there is voltage across the two AS2 terminals and no voltage across the two BS2 terminals, replace the arc suppressor (A.S.) board.

If there is no voltage across the two AS2 terminals on the arc suppressor (A.S.) board, the problem is a faulty wire or termination between the AS2 board and the J7 9-pin computer connector no. 8 or faulty computer.

3. Drive motor works in forward mode but **DOES NOT** reverse, blower motor runs

a. If computer dot (second one from left) does not come on, check program to see if set for reverse.

b. If set for reverse, replace computer.

c. Check for voltage across the coil of the reversing contactor located in the rear panel box. The contactor according to your diagram is CR3, also the markings on the coil are A1 and A2.

If there is voltage, replace the coil or the complete contactor.

If there is no voltage, check for voltage across the two BS3 terminals on the arc suppressor (A.S.) board.

If there is voltage across the two BS3 terminals and no voltage across the coil of the reversing contactor (A1 and A2), the problem is faulty wires or terminations between BS1 and the contactor coil.

d. If there is no voltage between the two BS3 terminals on the arc suppressor (A.S.) board, check for voltage across the two AS3 terminals on the board.

   If there is voltage across the two AS3 terminals and no voltage across the two BS3 terminals, replace the arc suppressor (A.S.) board.

   If there is no voltage across the two AS3 terminals, the problem is faulty wires or terminations between the arc suppressor (A.S.) board and the computer 9-pin connector no. 9 or a faulty computer.

4. Blower motor **DOES NOT** operate, drive motor runs

a. Check for voltage across terminals A1 and A2 of the impellor contactor. This is the single contactor in the reversing control box.

   If voltage is present check for voltage across the blower motor. If there is voltage at the blower motor replace the motor.

   If there is no voltage at the blower motor, the problem is faulty wires or terminations between the contactor and the motor.

b. If there is no voltage present at A1 and A2 of the contactor, check for voltage across the two BS1 terminals of the arc suppressor (A.S.) board.

   If there is voltage present at the two BS1 terminals, the problem is faulty wires or terminations between the two BS1 terminals and the coil (A1 and A2) terminals.

   If there is no voltage across the two BS1 terminals, check for voltage across the two AS1 terminals.

   If there is voltage across the two AS1 terminals and there is no voltage between the two BS1 terminals, replace the arc suppressor (A.S.) board.

c. If there is no voltage across the two AS1 terminals, the problem is faulty wires or terminations between the two AS1 terminals and the computer board J7 9-pin connector no. 7 or faulty computer.

5. Lint Door Condition

NOTE: Make sure main door and lint door are closed. Also, if checking either switch, the plunger ***must be*** depressed.

a. Check L.E.D. (light emitting diode) input light "LINT" on the component side of the computer. If the light is on, replace the computer.

b. Check voltage (24 VAC) from J7 9-pin connector no. 3 to ground. If voltage is present check no. 4 to ground if voltage is present replace board.

c. If no voltage is present at J7 9-pin connector no. 4 to ground, but voltage is present at no. 3 to ground. The problem is a faulty switch, wires or termination between J7 to J8 and J8 to the lint switch no. 20 and 21.

d. If no voltage is present at J7 9-pin connector no. 3 to ground, then voltage **should not be** present at no. 5 to ground. Replace the board.

6. Main Door Condition

NOTE: Make sure main door and lint door are closed. Also, if checking either switch, the plunger ***must be*** depressed.

a. Check L.E.D. (light emitting diode) input light "MAIN" on the component side of the computer. If the light is on, replace the computer.

b. Check voltage (24 VAC) from J7 9-pin connector no. 5 to ground. If voltage is present, check no. 6 to ground. If voltage is present, replace board.

c. If no voltage is present at J7 9-pin connector no. 6 to ground, but voltage is present at no. 5 to ground. The problem is a faulty switch, faulty wires or terminations J7 to J8. J8 to J5 and J5 to main door switch no. 31 and no. 32.

7. "No Heat" drive and blower motors run, display reads normal (gas models).

a. Check L.E.D. (light emitting diode) input light "HT1" on the component side of the computer. If the light is on replace the board.

b. If the L.E.D. (light emitting diode) input light "HT1" on the component side of the computer is on and there is no voltage to the HSI (Hot Surface Ignition) module "w" the display will read "BURNER CONTROL FAIL." The problem is faulty wires or terminations between microprocessor and HSI (Hot Surface Ignition) module.

c. If voltage is present on the HSI (Hot Surface Ignition) module "w" to ground. Check voltage at the gas valve if voltage is present across the two "yellow" wires at the gas valve and the gas supply is on then the fault is that of the gas valve.

8. Microprocessor (Computer)

a. Replace the temperature sensor underneath the tumbler (basket) on a bracket (the bullet shaped device).

b. If it still reads "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE," unplug J3 4-pin connector from the temperature sensor bracket. Also, unplug the microprocessor J14 4-pin connector from the computer board. Take a continuity reading from J14 no. 1 to J3 no. 1, then from J14 no. 2 to J3 no. 2.

If there is no continuity, check for break in wire, a short to the ground, loose terminations, or even replace the wire.

If there is continuity, computer board is faulty.

American Dryer Corp.

IMPORTANT

MANUAL RESET HI-LIMIT INSTRUCTIONS

FOR PHASE 6 MODELS

This dryer was manufactured with a manual reset burner hi-limit and tumbler/lint chamber hi-limit thermostat which is monitored by the Phase 6 computer. If either manual reset thermostat is open prior to start of the drying cycle, the dryer will start momentarily and then shut down, the Phase 6 computer will display an error code with an audio indication. If the tumbler/lint chamber hi-limit thermostat is open, the display will read "dRUM SAFETY FAIL." If the burner hi-limit thermostat is open, the display will read "bURNER SAFETY FAIL."

If either manual reset hi-limit thermostat opens during a drying cycle, the display will show the applicable error code described above along with an audio indication. If the drum temperature is above 100° F (38° C), the dryer will continue to run with no heat for three (3) minutes or until the drum temperature has flattened below 100° F (38° C). The clear/stop button on the Phase 6 keypad (touchpad) **must be** pressed to clear the error condition. The open manual reset hi-limit thermostat **must be** reset "manually" prior to the start of the next cycle.

This hi-temperature condition may be caused due to a restricted exhaust, poor airflow or improper burner operation.

The location of the burner hi-limit is on the right side of the burner box and the tumbler hi-limit is located in the lint chamber area.

WARNING: Discontinue power to dryer before attempting to reset hi-limit.

IMPORTANT

This dryer is equipped with a burner hi-limit and tumbler/lint chamber hi-limit thermostat which must be reset manually.

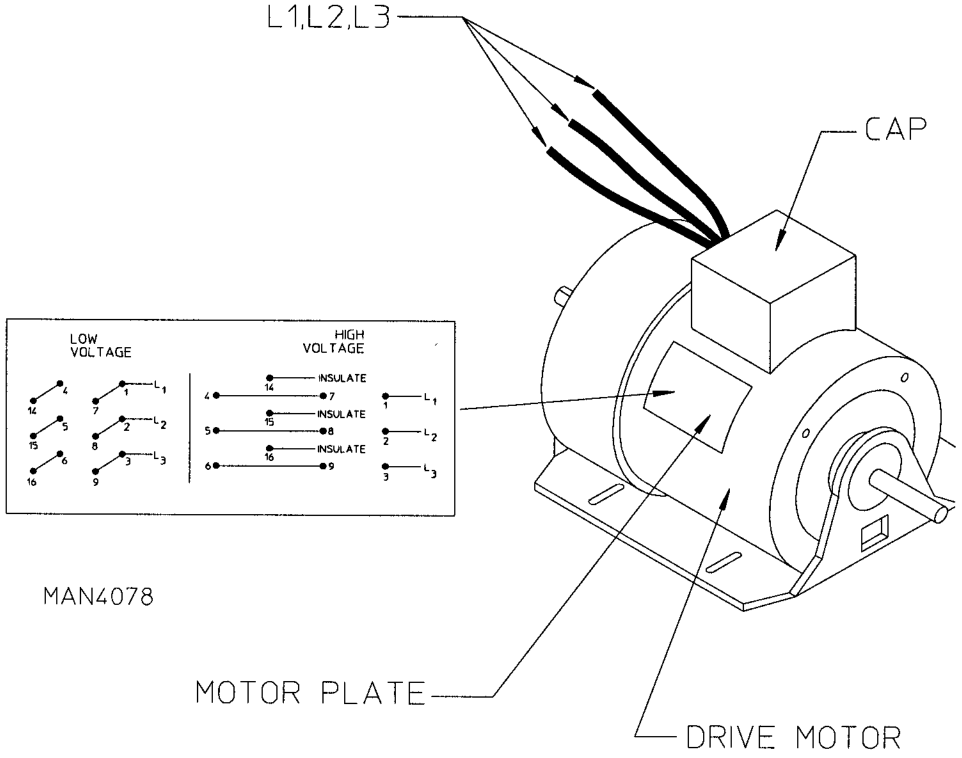
WARNING: Discontinue power to dryer before attempting to reset hi-limit.

SECTION VIII

TECHNICAL INFORMATION

The following section contains various technical information important to the service person in servicing and maintaining the dryer.

A. MOTOR PLATE (HIGH and LOW VOLTAGE)


L1,L2,L3
CAP
LOW VOLTAGE
HIGH VOLTAGE
4
14
5
15
6
16
1
7
2
8
3
9
L1
L2
L3
INSULATE
14
4
7
INSULATE
15
5
8
INSULATE
16
6
9
1
L1
2
L2
3
L3
MAN4078
MOTOR PLATE
DRIVE MOTOR

The motor plate is located on the side of the drive motor (refer to illustration) and contains a graphical representation of the motor wiring for both low and high voltage ratings.

Removing the cap reveals the wiring to the motor. On each wire there is a number which corresponds to the numbers on the motor plate. Depending on whether the dryer is operating on low or high voltage, the wiring should match the motor plate as follows:

The dots and lines represent connections (refer to illustration).

For example:

On low voltage - wire no. 14 is connected to wire no. 4

- wire no. 1 is connected to wire no. 7, which in turn are both connected to L1

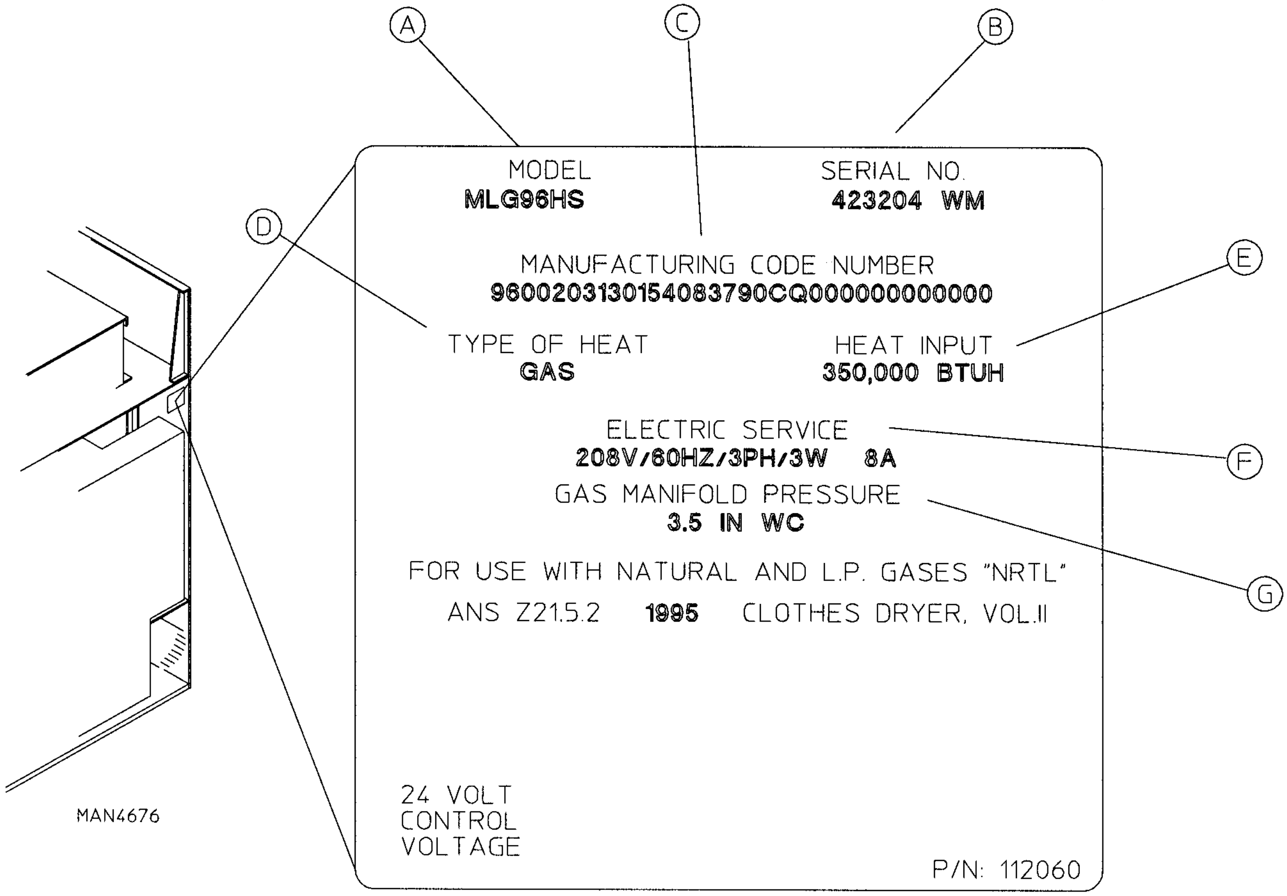
On high voltage - wire no. 14 is insulated or capped

- wire no. 4 is connected to wire no. 7

- wire no. 1 is connected to L1

B. DATA LABEL

Contacting American Dryer Corporation (ADC)



MODEL
MLG96HS

SERIAL NO.
423204 WM

MANUFACTURING CODE NUMBER
9600203130154083790CQ000000000000

TYPE OF HEAT
GAS

HEAT INPUT
350,000 BTUH

ELECTRIC SERVICE
208V/60HZ/3PH/3W 8A

GAS MANIFOLD PRESSURE
3.5 IN WC

FOR USE WITH NATURAL AND L.P. GASES "NRTL"
ANS Z21.5.2 1995 CLOTHES DRYER, VOL.II

24 VOLT
CONTROL
VOLTAGE

P/N: 112060

When contacting **ADC**, certain information is required to ensure proper service and parts information. This information is on the data label, located on the top right corner of the dryer, viewed from the rear (refer to illustration). When contacting **ADC**, please have the model number and serial number readily accessible.

Information on the Data Label

a. Model number - The model number is an **ADC** number which describes the size of the dryer and the type of heat (gas or steam).

b. Serial number - The serial number allows **ADC** to gather information on your particular dryer.

c. Manufacturing code number - The manufacturing code number is a number issued by **ADC** which describes **ALL** possible options on your particular model.

d. Type of heat - Describes the type of heat; gas (natural or L.P.), steam or electric.

e. Heat input - (For gas dryers) describes the heat input in British Thermal Units.

f. Electric service - Describes the electric service for your particular models.

g. Gas manifold pressure - Describe the manifold pressure as taken at the gas valve pressure tap (refer to "Using a Manometer").

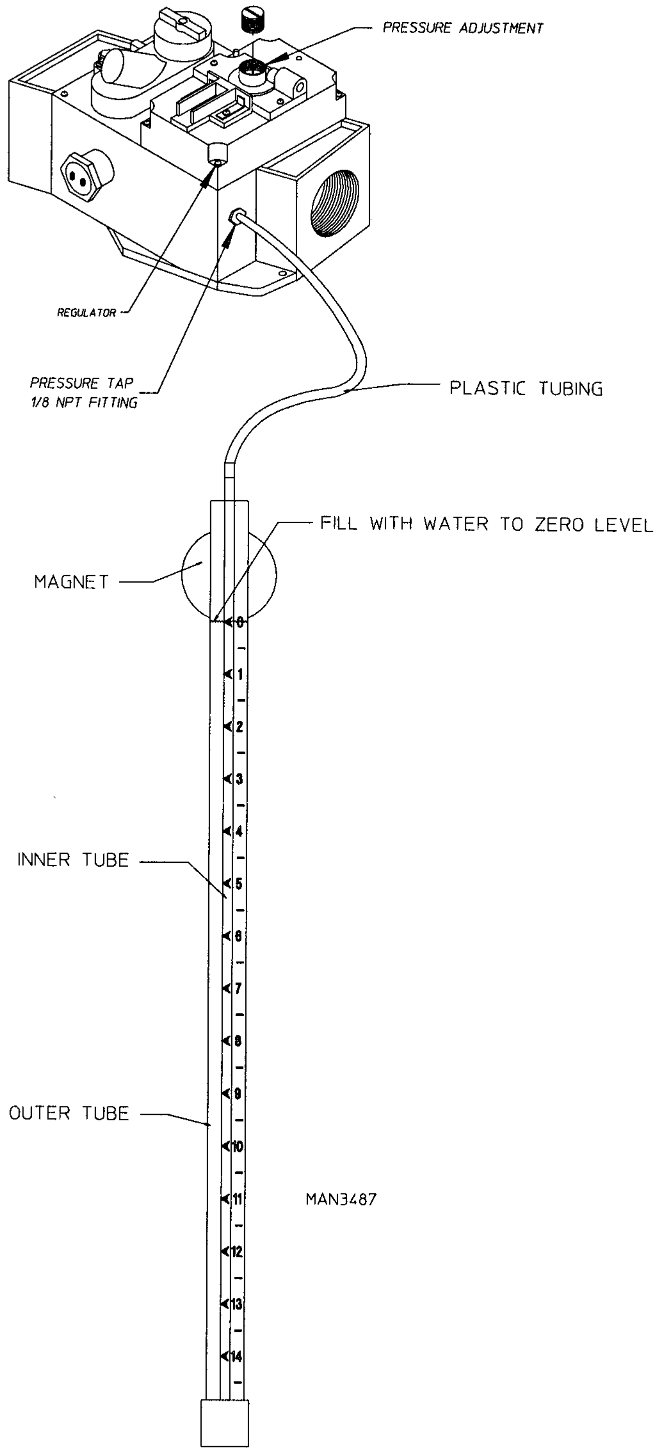
C. HOW TO USE A MANOMETER

1. With dryer in nonoperating mode, remove plug on the gas valve pressure tap.
2. Attach plastic tubing to pressure tap. Fitting is supplied with manometer (see illustration).
3. Attach manometer to dryer using magnet.

NOTE: Place manometer in a position so that readings can be taken at eye level.

4. Fill manometer with water, as shown in illustration to the zero level.
5. Start dryer. With burner on, take a reading.
   a. Read water level at the inner tube. Readings **should be** taken at eye level.
   b. Correct readings **should be**:

      NATURAL GAS: 3.5 inches W.C. - 8.7 mb .
      L.P. GAS: 10.5 inches W.C. - 26.1 mb.
6. If water column pressure is incorrect refer to "TO ADJUST GAS PRESSURE."
7. Reverse procedure for removing manometer.


PRESSURE ADJUSTMENT
REGULATOR
PRESSURE TAP
1/8 NPT FITTING
PLASTIC TUBING
FILL WITH WATER TO ZERO LEVEL
MAGNET
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
INNER TUBE
OUTER TUBE
MAN3487

D. ML-96 TOOL LIST

Straight Head Screwdriver

Phillips Head Screwdriver

Sensor Pin and Socket Tool (P/N 122801)

Pliers

1/4" Nut Driver

3/8" Open End Wrench

5/8" Open End Wrench

3/8" Socket Wrench

1/2" Socket or Open End Wrench

1/4" Open End Wrench

5/16" Socket or Open Wrench

1/2" Socket Wrench

7/16" Socket or Open End Wrench

5/16" Nut Driver

12" Pipe Wrench (2)

1/8" "T" Shaped or "L" Shaped Allen Wrench

3/16" "T" Shaped or "L" Shaped Allen Wrench

Wire Cutters

1/2" Allen Wrench

3/8" Allen Wrench

Channel Locks

Manometer (**ADC** P/N 122804)

MP Pin Extraction Tool (**ADC** P/N 122800)

ML-122 Table of Content

SECTION I

IMPORTANT INFORMATION B3

A. Safety Precautions B3

SECTION II

ROUTINE MAINTENANCE B5

A. Cleaning B5
B. Adjustments B6
C. Lubrication B6

SECTION III

INSTALLATION REQUIREMENTS B7

A. Enclosure, Air Supply, and Exhaust Requirements B7
B. Electrical and Gas Requirements B7
C. Operational Service Check Procedure B8

SECTION IV

DESCRIPTION OF PARTS B10

A. Control Panel (Microprocessor) B10
B. Reversing Relay Panel B10
C. HSI (Hot Surface Ignition) Module (Gas Models Only) B11
D. Gas Burner Assembly B11
E. Steam Coil System Operation B11
F. Drive Motor B13
G Drive Shaft Assembly B14
H. Idler Shaft Assembly B14
I. Tumbler (Basket) B14
J. Main Door Switch B15
K. Sail Switch (Gas Models Only) B15
L. Burner Hi-Limit (Gas Models Only) B15
M. Manual Reset Thermostat B16
N. Lint Screen B16
O. Lint Drawer Switch B16

SECTION V
SERVICING

SERVICING B17
A. Computer Controls B17
B. Ignition Controls B19
C. Thermostats B22
D. Sail Switch Assembly (Gas Models Only) B23
E. Steam Damper Actuator System Service and Replacement B24
F. Front Panel and Main Door Assemblies B27
G Pulleys B29
H. Tumbler Wheel Replacement on Drive Assembly (Taper Lock Models) B30
I. Tumbler Wheel Replacement on Idler Assembly (Taper Lock Models) B31
J. Basket Assembly B32
K. 1-15/16 Frange Bearing Replacement B32
L. Rotational Sensor Assembly B33
M. Idler Shaft Pillow Block Bearing Replacement B33
N. Drive Assembly Pillow Block Bearing Replacement B34
O. V-Belt Adjustment (Motor to Drive Axle) B34
P. Motors B35
Q. Motorized Impellor (Blower) Replacement B35
R. Lint Door Switch Replacement B36

SECTION VI

TROUBLESHOOTING B37

SECTION VII

PHASE 6 OPL SYSTEM DIAGNOSTICS B41
A. Diagnostic (L.E.D. [light emitting diode] Display) Failure Codes B41
B. L.E.D. (light emitting diode) Display Indicators B43
C. Phase 6 OPL Microprocessor Controller (Computer) Relay Output L.E.D. (light emitting diode) Indicators B44
D. L.E.D. Codes B48
E. Computer Logic and Wiring Diagram B50

SECTION VIII

TECHNICAL INFORMATION B56
A. Motor Plate (High and Low Voltage) B56
B. Data Label B57
C. How to Use a Manometer B58
D. ML-122 Tool List B59

SECTION I

IMPORTANT INFORMATION

A. SAFETY PRECAUTIONS

WARNING: For your safety, the information in this manual ***must be*** followed to minimize the risk of fire or explosion or to prevent property damage, personal injury, or loss of life.

WARNING: The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. PERSONAL INJURY or FIRE COULD RESULT.

1. **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

2. Purchaser/user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions **should be** posted in a prominent location.

3. WHAT TO DO IF YOU SMELL GAS...

   a. **DO NOT** try to light any appliance.

   b. **DO NOT** touch any electrical switch.

   c. **DO NOT** use any phone in your building.

   d. Clear the room, building, or area of **ALL** occupants.

   e. Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

   f. If you **cannot** reach your gas supplier, call the fire department.

4. Installation and service **must be** performed by a qualified installer, service agency, or gas supplier.

5. Dryer(s) **must be** exhausted to the outdoors.

6. Although **ADC** produces a very versatile machine, there are some articles that, due to fabric composition or cleaning method, **should not be** dried in it.

WARNING: Dry only water-washed fabrics. ***DO NOT*** dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "ALL purpose" cleaner.
EXPLOSION COULD RESULT.

WARNING: ***DO NOT*** dry rags or articles coated or contaminated with gasoline, kerosene, oil, paint, wax.
EXPLOSION COULD RESULT.

WARNING: *DO NOT* dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

WARNING: *DO NOT* use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubber materials. Drying in a heated tumbler (basket) may damage plastics or rubber and also may be a fire hazard.

7. A program **should be** established for the inspection and cleaning of lint in the heating unit area, exhaust duct work, and inside the dryer. The frequency of inspection and cleaning can best be determined from experience at each location.

WARNING: The collection of lint in the burner area and exhaust duct work can create a potential fire hazard.

8. For personal safety, the dryer **must be** electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

NOTE: Failure to do so will VOID THE WARRANTY.

9. **UNDER NO CIRCUMSTANCES** should the dryer door switches, lint door switch, heat safety circuit ever be disabled.

WARNING: **PERSONAL INJURY or FIRE COULD RESULT.**

10. This dryer is not to be used in the presence of dry cleaning solvents or fumes.

11. Remove articles from the dryer as soon as the drying cycle has been completed.

WARNING: Articles left in the dryer after the drying and cooling cycles have been completed can create a fire hazard.

12. **DO NOT** operate steam dryers with more than 125 PSI (8.61 bars) steam pressure. Excessive steam pressure can damage steam coil and/or harm personnel.

13. Replace leaking flexible hoses or other steam fixtures immediately. **DO NOT** operate the dryer with leaking flexible hoses. **PERSONAL INJURY MAY RESULT.**

14. **READ and FOLLOW ALL CAUTION and DIRECTION LABELS ATTACHED TO THE DRYER.**

WARNING: **YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA** (Occupational Safety and Health Administration) **STANDARDS.**

SECTION II

ROUTINE MAINTENANCE

A. CLEANING

A program and schedule **should be** established for periodic inspection, cleaning, and removal of lint from various areas of the dryer, as well as throughout the duct work system. The frequency of cleaning can best be determined from experience at each location. Maximum operating efficiency is dependent upon proper air circulation. The accumulation of lint can restrict this airflow. If the guidelines in this section are met, an **ADC** dryer will provide many years of efficient, trouble free, and – most importantly – safe operation.

WARNING: LINT FROM MOST FABRICS IS HIGHLY COMBUSTIBLE. THE ACCUMULATION OF LINT CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: KEEP DRYER AREA CLEAR and FREE FROM COMBUSTIBLE MATERIALS, GASOLINE and OTHER FLAMMABLE VAPORS and LIQUIDS.

NOTE: Suggested time intervals shown for average usage which is considered six (6) to eight (8) operational (running) hours per day.

Clean lint drawer and screen every third load.

NOTE: Frequency can best be determined at each location.

DAILY
(beginning) of each work shift.

Clean lint from the drawer and screen. Inspect lint screen and replace if torn.

WEEKLY

Clean lint accumulation from lint chamber, thermostat, and microprocessor temperature sensor (sensor bracket) area.

WARNING: To avoid the hazard of electrical shock, discontinue electrical supply to dryer.

90 DAYS

Remove lint from tumbler (basket), drive motors, and surrounding areas. Remove lint from gas valve burner area with a dusting brush or vacuum cleaner attachment.

NOTE: To prevent damage, avoid cleaning, or touching ignitor and flame-probe assembly.

Remove lint accumulation from inside control box and at rear area behind control box.

EVERY 6 MONTHS

Inspect and remove lint accumulation in customer furnished exhaust duct work system and from dryer's internal exhaust ducting.

WARNING: THE ACCUMULATION OF LINT IN THE EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: ***DO NOT*** OBSTRUCT THE FLOW OF COMBUSTION and VENTILATION AIR. CHECK CUSTOMER FURNISHED BACK DRAFT DAMPER IN EXHAUST DUCT WORK. INSPECT and REMOVE ANY LINT ACCUMULATION WHICH CAN CAUSE DAMPER TO BIND or STICK.

NOTE: A back draft damper that is sticking partially closed can result in slow drying and shutdown of the heat circuits safety switches or thermostats.

NOTE: When cleaning dryer cabinets, avoid using harsh abrasives. A product intended for cleaning appliances is recommended.

B. ADJUSTMENTS

7 DAYS AFTER INSTALLATION and EVERY 6 MONTHS THEREAFTER

Inspect bolts, nuts, screws, (bearing set screws), nonpermanent gas connections (unions, shut-off valves, orifices, and grounding connections). Motor and drive belts **should be** examined. Cracked or seriously frayed belts **should be** replaced. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of **ALL** safety devices (door switch, lint drawer switch, sail switch, burner and hi-limit thermostats).

C. LUBRICATION

The drive shaft bearings and idler shaft bearings **should be** lubricated every three (3) months. Use a #3 grease or equivalent. Lubrication is necessary.

The motor bearings and under normal/most conditions the tumbler bearing are permanently lubricated. It is physically possible to re-lubricate the tumbler bearing if you choose even though this practice may not be necessary. Use Industrial Chevron ball or roller bearing SRI grease NLGI2 or its equivalent which has a broad operating temperature range of 22° F (-6° C) to 350° F (177° C).

SECTION III

INSTALLATION REQUIREMENTS

Installation **should be** performed by competent technicians in accordance with local and state codes. In the absence of these codes, the installation **must conform** to applicable AMERICAN NATIONAL STANDARDS: National Fuel Gas Code ANSI.Z223.1-LATEST EDITION or National Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION (for General Installation and Gas Plumbing) or Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

A. ENCLOSURE, AIR SUPPLY, and EXHAUST REQUIREMENTS

NOTE: The following information is very brief and general. For detailed description, refer to the ML-122 Installation Manual (**ADC** Part No. 113071) supplied with dryer.

Bulkheads and partitions around the dryer **should be** made of noncombustible materials. Allowances **should be** made for the opening and closing of the control door and lint door. (Refer to appropriate installation manual for recommended distances and minimum allowances required.)

When the dryer is operating, it draws in room air, heats it, passes this air through the tumbler (basket), and exhausts it out of the building. Therefore, the room air **must be** continually replenished from the outdoors. If the make-up air is inadequate, drying time and drying efficiency will be adversely affected. Ignition problems and sail switch "fluttering" problems on gas dryers may result, and you also could have premature motor failure from overheating. The air supply **must be** given careful consideration to insure proper performance of each dryer.

IMPORTANT: Make-up air ***must be*** provided from a source free of dry cleaning fumes. Make-up air that is contaminated by dry cleaning fumes will result in irreparable damage to motors and other dryer components.

Exhaust duct work **should be** designed and installed by a competent technician. Improperly sized duct work will create excessive back pressure which will result in slow drying, increased use of energy, and shutdown of the burner by the airflow (sail) switch, burner hi-limit or lint chamber hi-heat protector thermostat. (Refer to appropriate Installation Manual for more details.)

CAUTION: IMPROPERLY SIZED or INSTALLED EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

B. ELECTRICAL and GAS REQUIREMENTS

It is your responsibility to have **ALL** electrical connections made by a properly licensed and competent electrician to assure the electrical installation is adequate and conforms with local and state regulations or codes. In the absence of such codes, **ALL** electrical connections, material, and workmanship **must conform** to the applicable requirements of the National Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

IMPORTANT: Failure to comply with these codes or ordinances and the requirements stipulated in this manual can result in personal injury or component failure.

The dryer installation **must meet** the American National Standard, National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections) as well as, local codes and ordinances, and **must be** done by a qualified technician.

NOTE: Undersized gas piping will result in ignition problems and slow drying and can create a safety hazard.

The dryer **must be** connected to the type of gas (natural or L.P. [liquid propane]) indicated on the dryer data label. If this information ***DOES NOT agree with the type of gas available, contact the distributor who sold the dryer or contact the factory.***

The gas input ratings shown on the dryer data label are for elevations up to 2,000 feet (610 meters), unless elevation requirements of over 2,000 feet (610 meters) were specified at the time the dryer order was placed with the factory. The adjustment for dryers in the field for elevations over 2,000 feet (610 meters) are made by changing the burner orifices. If this adjustment is necessary, contact the distributor who sold the dryer or contact the factory.

NOTE: Any burner changes ***must be*** made by a qualified technician.

C. OPERATIONAL SERVICE CHECK PROCEDURE

1. Turn on electric power to the dryer.

2. To start dryer:

   a. Display will read "READY."

   b. Press "E" on the keyboard (touchpad) of microprocessor controller (computer).

   c. The dryer will start and display will show "dRYING MANUAL CYCLE, 30 MIN REMAIN," then display the drum temp.

NOTE: Pressing keyboard (touchpad) selections "A," "B," "C," "D," and "F" will also start the dryer. Six (6) preprogrammed drying cycles (A through F) have been stored in the computer's memory. (Refer to the Computer Operator's Manual for details.)

3. Make a complete operational check of **ALL** the operating controls to assure that the timing is correct, temperature selection switches are functioning, etc.

4. Make a complete operational check of **ALL** safety-halted circuits: door switches, hi-limit thermostat, sail switch, cycling thermostats, etc.

5. For gas dryers a gas pressure test **should be** taken at the gas valve pressure tap of each dryer to assure that the water column pressure is correct and consistent.

,**NOTE:** Water column pressure requirements (measured at the pressure tap on the gas valve body):

Natural Gas - 3.5 inches water column (W.C.) - 8.7 mb.
L.P. Gas - 10.5 inches water column (W.C.) - 26.1 mb.

6. If computer program changes are required, refer to the Phase 6 OPL Operator's Manual (**ADC** Part No. 113022) for details.

7. The dryer **should be** operated through one complete cycle to assure that no further adjustments are necessary and that **ALL** components are functioning properly.

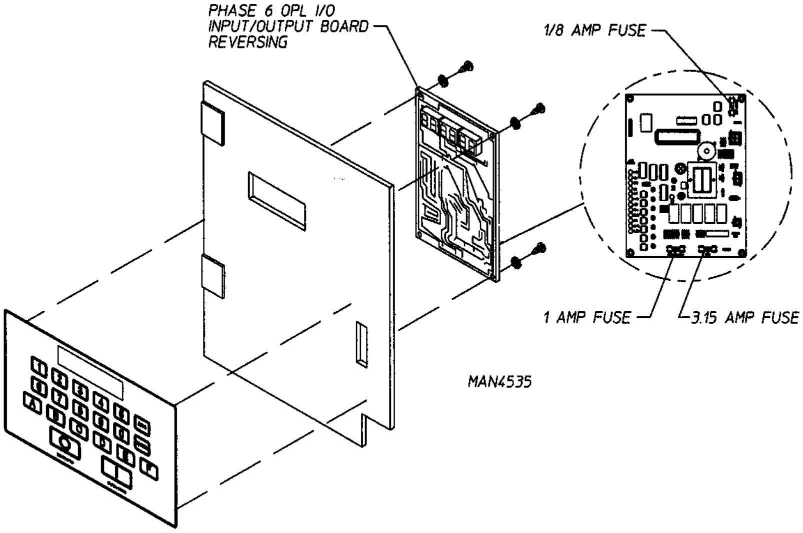
8. Check the electric service phase sequence. While the dryer is operating, check to see if the blower wheel is rotating in the proper direction. Looking from the front, the blower wheel **should spin** in the clockwise (CW) direction. If so, the phasing is correct. If the phasing is incorrect, reverse two (2) leads at connections L1, L2, or L3 of power supply to the dryer.

SECTION IV

DESCRIPTION OF PARTS

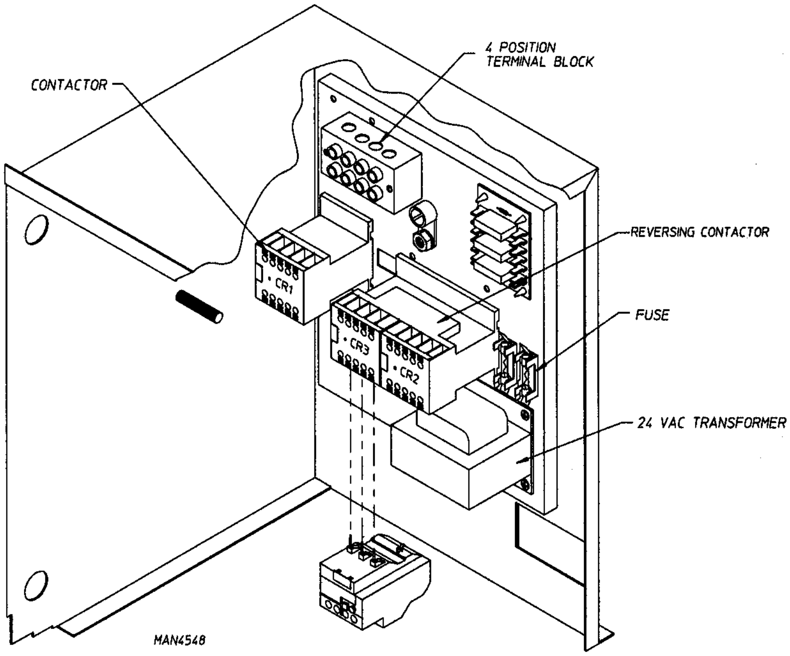
A. CONTROL PANEL (MICROPROCESSOR)

Lifting the control door will reveal the Control Panel Assembly. Opening the control panel will allow access to the major components which include the microprocessor computer board and the keyboard (touchpad). The keyboard (touchpad) inputs to the computer what temperature and program has been selected. The computer controls the entire operation of the machine. It accepts inputs and gives outputs throughout the machine.


PHASE 6 OPL I/O
INPUT/OUTPUT BOARD
REVERSING
1/8 AMP FUSE
1 AMP FUSE
3.15 AMP FUSE
MAN4535

B. REVERSING RELAY PANEL

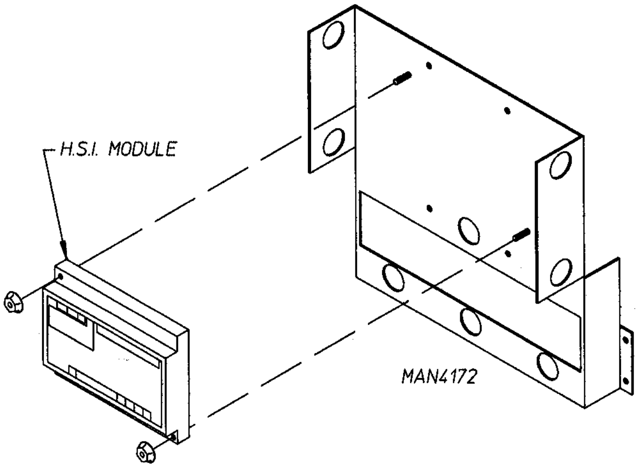
Lifting the control door will reveal the Reversing Relay Box. Located on the back of the relay box is the reversing relay panel. Included on this panel is a 4-position terminal block, blower overload, blower contactor, reversing contactor, 24 VAC transformer, fuse or circuit breaker, ground lug, and an arc suppressor (A.S.) board.


CONTACTOR
4 POSITION
TERMINAL BLOCK
REVERSING CONTACTOR
FUSE
24 VAC TRANSFORMER
CR1
CR3
CR2
MAN4548

...with fuses

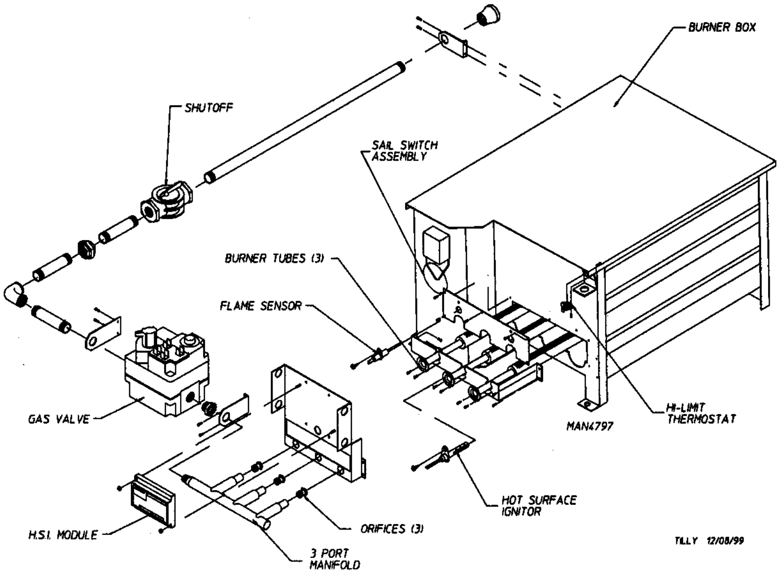
C. HSI (HOT SURFACE IGNITION) MODULE (Gas Models Only)

The HSI (Hot Surface Ignition) system consists of a microprocessor (computer) based control module, along with a hot surface ignitor probe, and a flame probe assembly. The hot surface ignitor is a silicon carbide ignitor that upon application of 24 VAC will glow bright orange for the inter-purge time period. Upon ignition, the resistance in the flame sensor electrode changes and the information is sent to the HSI module via the sensor probe lead connection to the module. Once the resistance is changed and sensed, the HSI module will sustain the gas flow (provide 24 VAC power to the gas valve).


H.S.I. MODULE
MAN4172

D. GAS BURNER ASSEMBLY

Gas heated dryers are equipped with a gas burner assembly consisting of three (3) burner tubes, a gas valve, a hot surface ignitor, a flame sensor, a sail switch, and a hi-limit thermostat. The inlet piping enters through the rear of the dryer on the left hand side (viewing from the front) and runs to the front of the dryer where the gas valve is located.

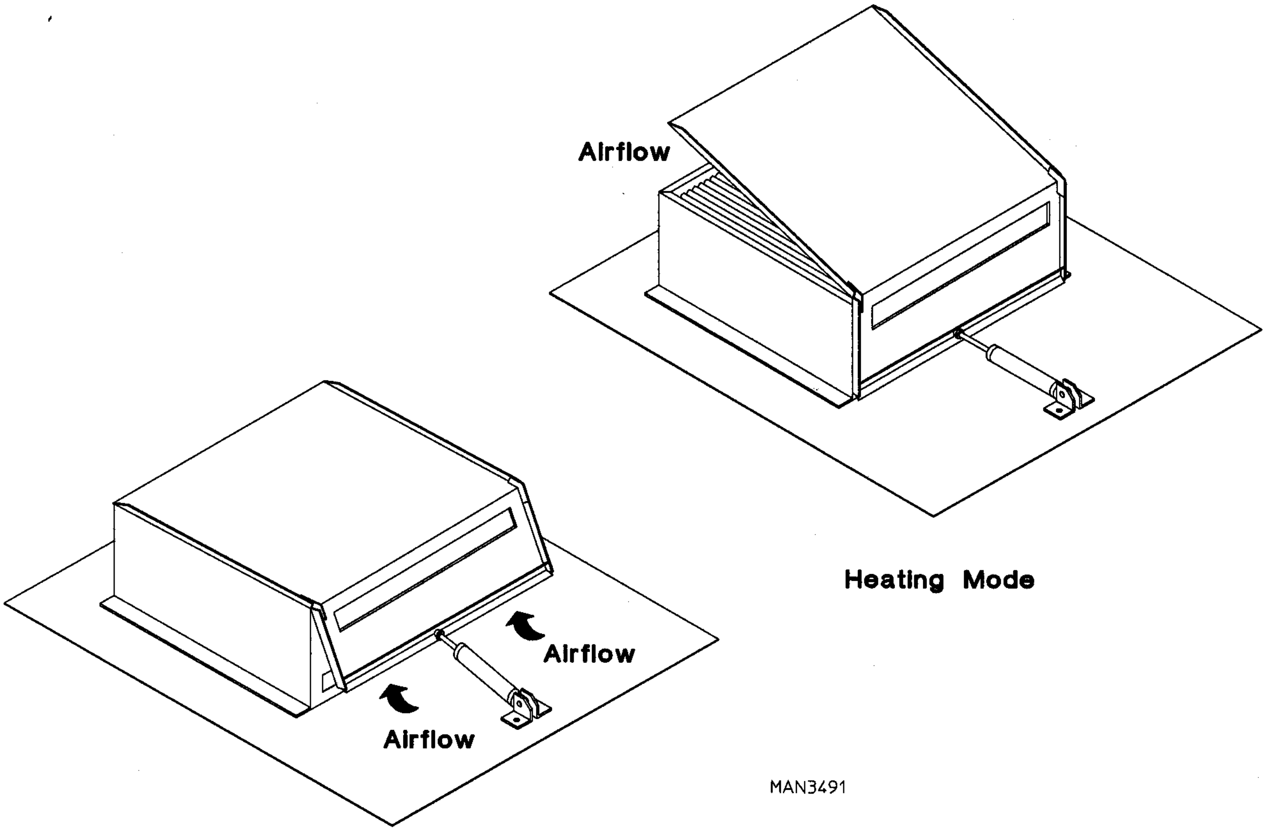

BURNER BOX
SHUTOFF
SAIL SWITCH ASSEMBLY
BURNER TUBES (3)
FLAME SENSOR
GAS VALVE
HI-LIMIT THERMOSTAT
MAN4797
HOT SURFACE IGNITOR
ORIFICES (3)
H.S.I. MODULE
3 PORT MANIFOLD
TILLY 12/08/99

E. STEAM COIL SYSTEM OPERATION

General Overview

The ML-122 steam coil is constantly charged, thereby eliminating repeated expansion and contraction and also provide instant heating to start the drying process. The steam damper, located on top of the steam coil, is the only temperature controlling device in this system. When the steam damper is open, ambient air is drawn through the coil providing heat to the dryer. When the steam damper is closed, ambient air is drawn directly into the tumbler (basket), bypassing the coil, allowing a rapid cool down.

NOTE: With the dryer off or no air supply to the damper piston, the damper is in the Cool Down Mode...the coil is constantly charged.



Heating Mode

Cool Down Mode

MAN3491

1. Steam Coil PH Level

The normal PH level for copper type steam coils **must be** maintained between a value of 8.5 to 9.5. For steel type steam coils the PH level **must be** maintained between a value of 9.5 to 10.5. These limits are set to limit the acid attack of the steam coils.

IMPORTANT: Coil failure due to improper PH level will VOID THE WARRANTY.

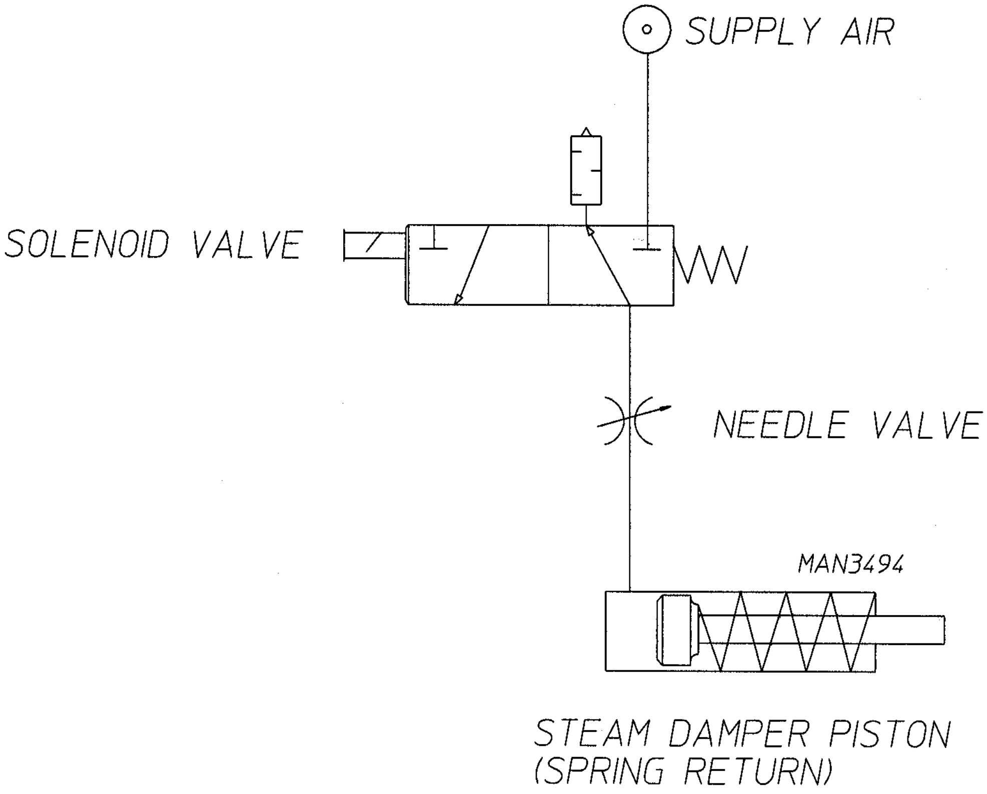
2. Steam Damper Actuator System

The steam damper actuator system consists of a hinged damper plate, pneumatic piston, and a 24 volt solenoid valve with a needle valve to control the speed of the piston actuation.

On a call for heat, a 24 volt signal is applied to the 3-way/2-position solenoid valve. This signal switch the valve so that compressed air is sent to the piston. The piston rod extends, pushing the hinged steam damper plate to the open position. This allows room air to be drawn through the hot steam coil and then through the tumbler (basket).

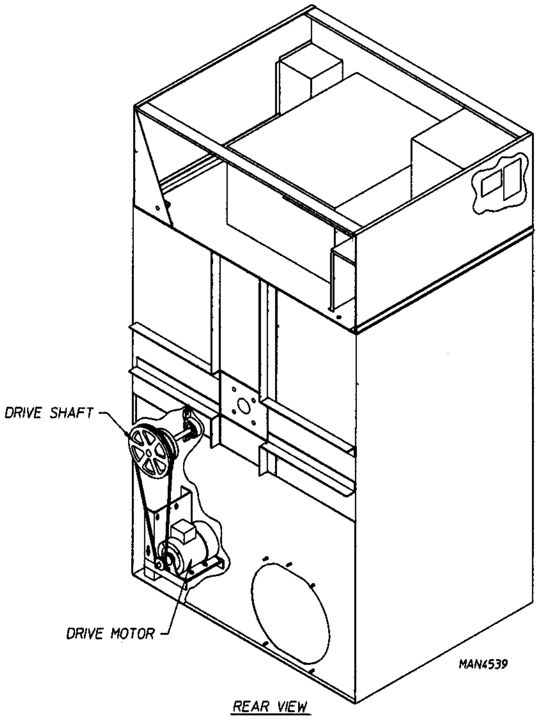
When the temperature set point has been reached, the 24 volt signal is removed from the solenoid valve, so that the solenoid valve blocks the air supply to the piston, and air in the piston is bled to the atmosphere. The spring in the piston now retracts the piston rod, closing the steam damper. The steam damper plate now covers the steam coil and allows room air to bypass the coil before entering the tumbler (basket) for a rapid cool down.

The steam damper plate should open and close slowly and smoothly. The speed can be modulated by adjusting the needle valve knob. Turning the knob clockwise (CW) restricts the compressed airflow and slows the steam damper movement. Counterclockwise (CCW) adjustment speeds up the steam damper motion. Upon completion of the adjustment, tighten the needle valve's locking nut.


SUPPLY AIR
SOLENOID VALVE
NEEDLE VALVE
MAN3494
STEAM DAMPER PISTON
(SPRING RETURN)

F. DRIVE MOTOR

The T.E.F.C. (Totally Enclosed, Fan-Cooled) drive motor is located in the front left corner (viewing from front) behind the front panel of the dryer. It sits on an adjustable base so the motor can be easily adjusted to the left or right, up or down, forward or backward. The drive motor is a 3 HP (2.24 kw) motor and operates on 208 to 460 volts, 3-phase (3ø), 50/60 Hz.

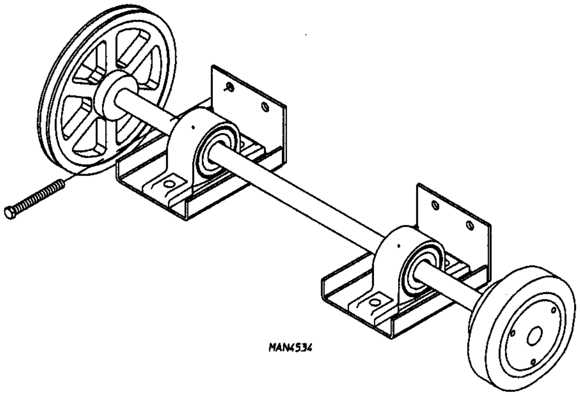

DRIVE SHAFT
DRIVE MOTOR
MAN4539
REAR VIEW

NOTE: The bearing on this type of blower assembly ***should be*** greased according to the maintenance section of this manual.

G. DRIVE SHAFT ASSEMBLY

(Viewing from the front of the dryer.)

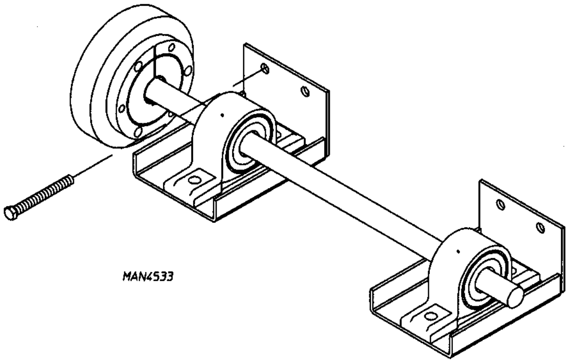
Behind front panel on the left side of the dryer, you can view the drive shaft assembly which consists of a 9-inch (22.86 cm) drive pulley, two (2) 6-inch (15.24 cm) wheels, two (2) taper lock bearings, and two (2) 1-inch (2.54 cm) pillow block bearings.



H. IDLER SHAFT ASSEMBLY

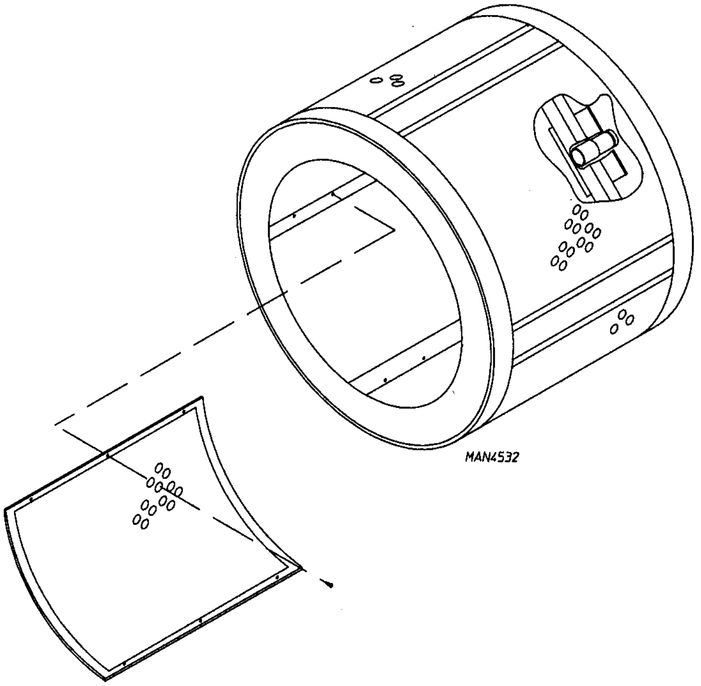
(Viewing from the front of the dryer.)

Behind the front panel on the right side of the dryer you will view the idler shaft assembly which consists of one (1) 6-inch (15.24 cm) wheel, one (1) taper lock bearings, and two (2) 1-inch (2.54 cm) pillow block bearings.



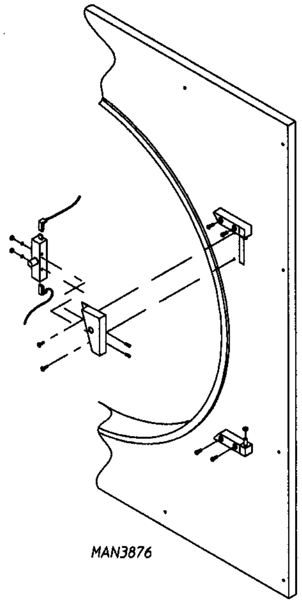
I. TUMBLER (BASKET)

The tumbler (basket) consists of a tumbler (basket) which has four (4) ribs and four (4) removable perforated panels which are mounted to the rib sections of the tumbler (basket) with 1/4-20 x 1/4” socket button head screws.



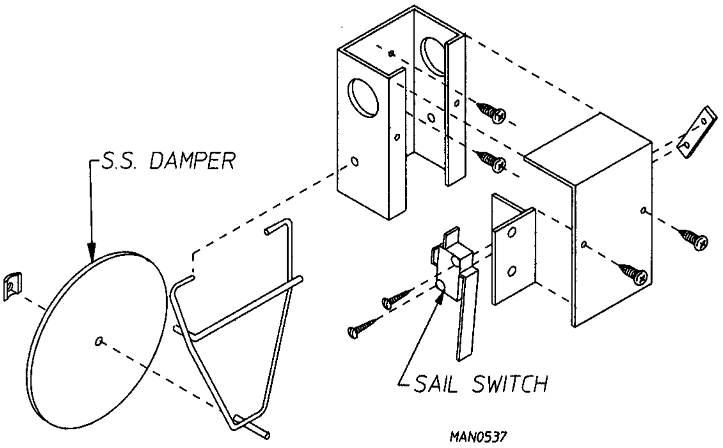
J. MAIN DOOR SWITCH

The main door switch is mounted to the front panel behind the main door. When the main door opens, the switch will also open, preventing the dryer from operating. The main door switch is a safety device and **should never be** disabled.



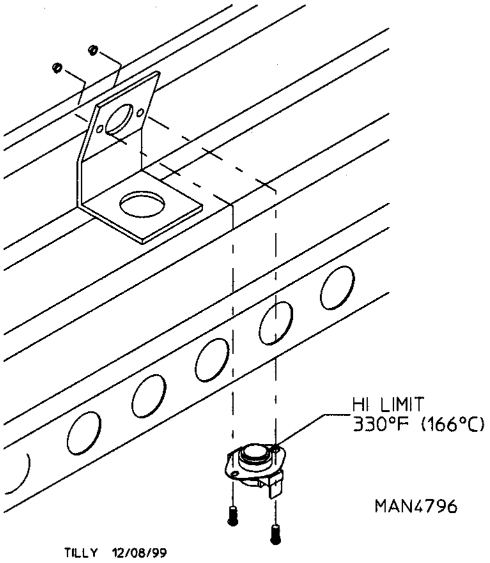
K. SAIL SWITCH (Gas Models Only)

The sail switch is located on the front of the burner box. A sail switch consists of a round damper plate on a lever arm which is in contact with an electric switch. When the fan or air blower comes on, it draws air through the gas burner. This creates a negative pressure inside the burner box, and this negative pressure pulls in the round damper and activates the sail switch. If there is improper airflow, the damper will not pull in, preventing the burner from starting. The display will also read "no airflow" with an audio indication. Improper airflow can be caused by improperly designed exhaust ducting where the duct run is too long or has too many sharp bends in it. It can also be caused by a lack of make-up air.



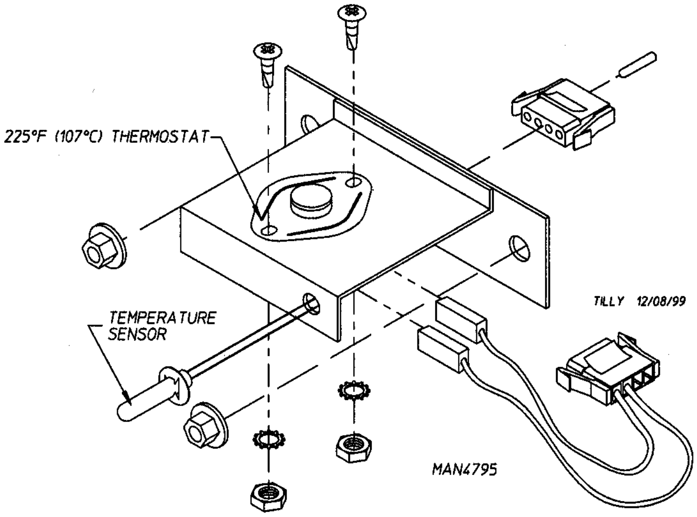
L. BURNER HI-LIMIT (Gas Models Only)

The hi-limit thermostat is a manual reset disc-type thermostat set at 330° F (166° C) and located near the burner. If the burner flame gets too hot, this thermostat will shut off the burner. This is generally caused by low airflow through the dryer. In a hi-limit situation the L.E.D. (light emitting diode) display will read "bURNER SAFETY FAIL" with an audio indication. The manual reset thermostat **must be** reset manually or the 24 VAC burner circuit will never be complete. This will cause the Phase 6 microprocessor (computer) to continue to go off on "bURNER SAFETY FAIL" with an audio indication.



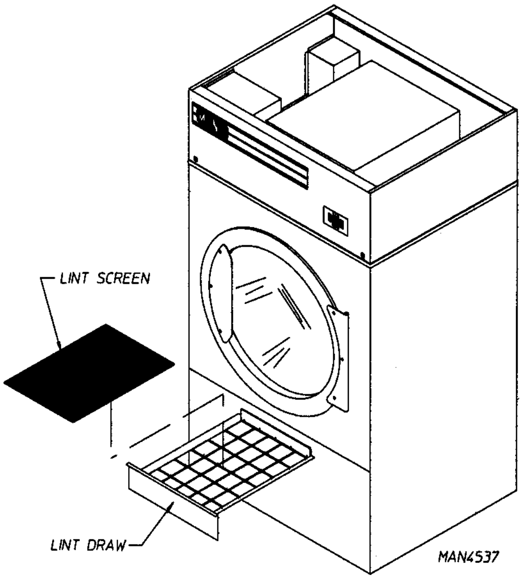
M. MANUAL RESET THERMOSTAT

This is located inside the dryer in the lint compartment above the lint screen. This thermostat senses the heated air after it passes through the tumbler (basket). If the air temperature gets too hot, the thermostat will shut off the burner. The dryer will not run until the air temperature cools down. At this time, the manual reset thermostat **must be** reset manually or the 24 VAC burner circuit will never be completed. Tumbler (basket) and blower will run but the dryer will not heat. If the temperature sensor opens the L.E.D. (light emitting diode) display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the thermostat opens the L.E.D. (light emitting diode) display will read "dRUM SAFETY FAIL" with an audio indication.


225°F (107°C) THERMOSTAT
TEMPERATURE SENSOR
TILLY 12/08/99
MAN4795

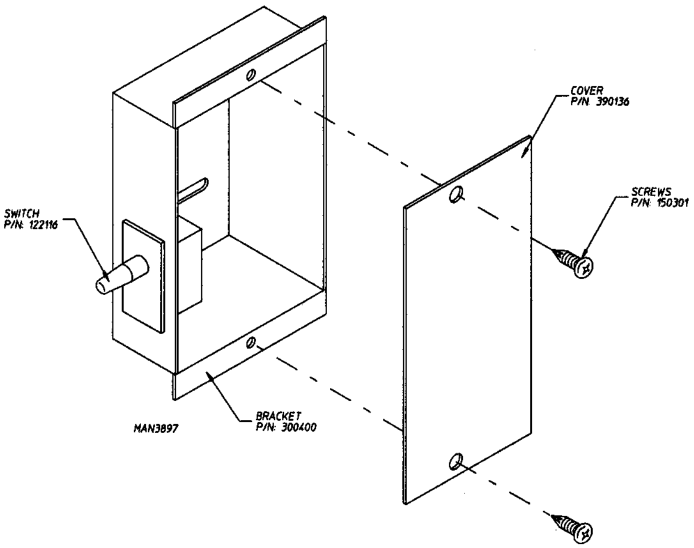
N. LINT SCREEN

The Lint Screen is located in the front of the dryer in the Lint Coop Assembly. To clean the lint off the screen simply brush the screen clean. The lint screen **must be** kept clean in order for the dryer to operate properly and efficiently. Inspect the screen for tears and replace as needed.


LINT SCREEN
LINT DRAW
MAN4537

O. LINT DRAWER SWITCH

The Lint Door Switch is located in the lint compartment and attached to the side of the lint coop. The lint door switch ensures that the dryer will operate only when the lint door is completely closed. This is a safety device and **should never be** disabled.


COVER P/N: 390136
SCREWS P/N: 150301
SWITCH P/N: 122116
BRACKET P/N: 300400
MAN3897

SECTION V

SERVICING

INTRODUCTION

ALL electrical and mechanical service or repairs **should be** made with the electrical power to the dryer disconnected (power off).

WARNING: PERSONAL INJURY COULD RESULT.

The information provided in this section **should not be** misconstrued as a device for use by an untrained person making repairs. Service work **should be** performed by competent technicians in accordance with local, state, and federal codes. When contacting the factory for assistance, always have the dryer model and serial numbers available.

CAUTION: Observe **ALL** safety precautions displayed on the dryer or specified in this manual before and while making repairs.

Before considering replacement, make sure that **ALL** connectors are in place and making proper contact.

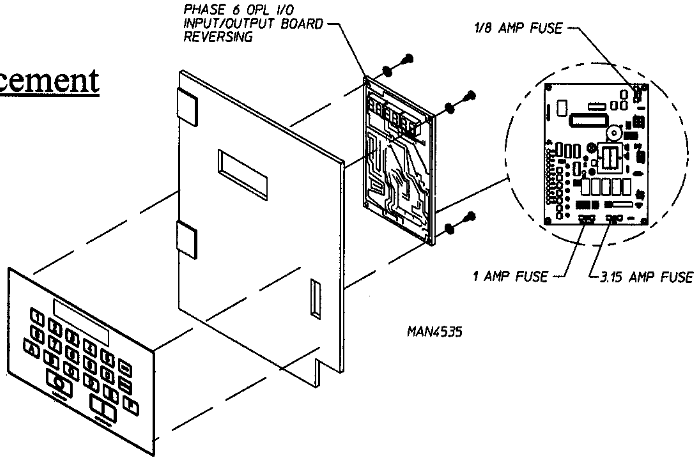
A. COMPUTER CONTROLS

Display Board Replacement

1. Discontinue electrical power to the dryer.
2. Unplug keyboard (touchpad) ribbon from the rear of the computer.
3. Unplug ribbon cable assembly from the rear of the computer.
4. Remove the two (2) screws securing the computer to the computer box door. Remove the computer by pulling the other two (2) corners off the clinch studs.
5. Install new display by reversing this procedure.

Microprocessor Computer Board Replacement

1. Discontinue electrical power to the dryer.
2. Unplug keyboard (touchpad) ribbon from rear of the computer.
3. Unplug **ALL** wiring harnesses connected to the computer board.



4. Remove the two (2) screws securing the computer to the computer panel. Remove the computer by pulling the other two (2) corners off the clinch studs.

5. Install new computer by reversing this procedure.

Keyboard (Touchpad) Label Assembly Replacement

1. Discontinue electrical power to the dryer.

2. Unplug keyboard (touchpad) ribbon from rear of the microprocessor computer.

3. Slowly peel off and remove keyboard (touchpad) label assembly from control panel.

4. Peel paper backing off new keyboard (touchpad) label assembly.

5. Holding the new keyboard (touchpad) label assembly close to the panel, insert the keyboard (touchpad) ribbon through the rectangular slot in the control panel. Align label assembly into position by matching the red viewing window on the label to the rectangular cutout in the panel and gently press into place.

6. Connect keyboard (touchpad) ribbon to the computer.

7. Reestablish electrical power to the dryer.

Microprocessor Temperature Sensor Probe Replacement

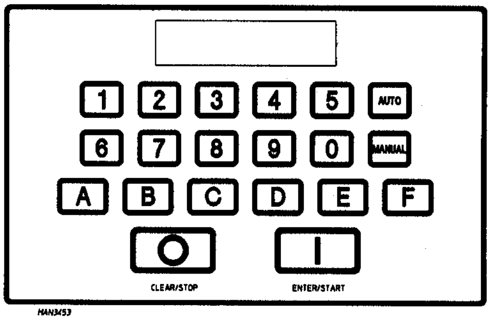
1. Discontinue electrical power to the dryer.

2. Remove perforated panel from tumbler (basket).

3. Remove microprocessor sensor bracket assembly from dryer.

   a. Disconnect sensor bracket harness connector.

   b. Loosen the two (2) Phillips head screws which secure bracket assembly to dryer and remove bracket from dryer.



NOTE: ***DO NOT*** remove screws.

4. Disassemble sensor probe from bracket assembly by removing the top push-on fastener securing the probe from bracket. Use a small screwdriver to slowly pry the fastener off.

5. Disconnect the two (2) "orange" wires from the high heat (225° F [107° C]) thermostat, and remove modular bracket connector, wires, and probe from bracket assembly.

6. Install new sensor probe assembly (**ADC** Part No. 880252) by reversing procedure.

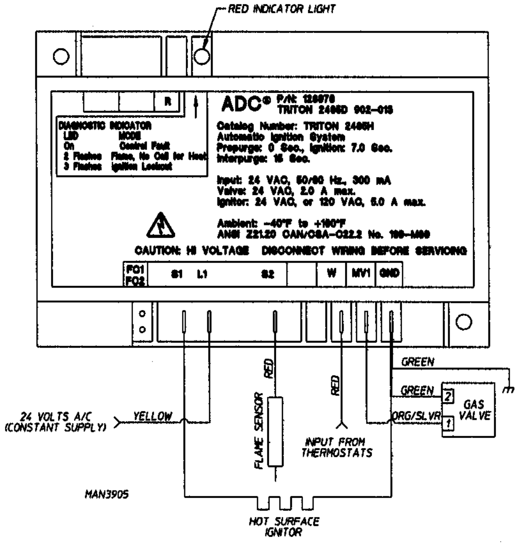
7. Reestablish electrical power to the dryer.

NOTE: If, when electrical power is reestablished, the microprocessor computer L.E.D. (light emitting diode) display reads "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE," check for a loose connection in the wiring.

B. IGNITION CONTROLS

Hot Surface Ignition Module Replacement
(refer to burner illustration on page 22)

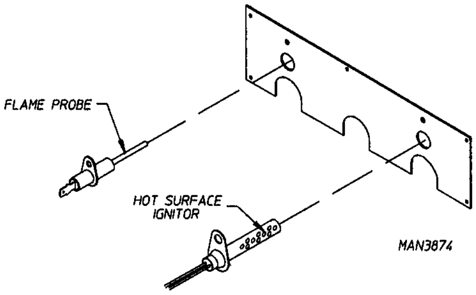
1. Discontinue electrical power to the dryer.
2. Disconnect wire from S1 and GND on the HSI (Hot Surface Ignition) module.
3. Disassemble ignitor from burner by removing the one (1) self tapping screw.
4. Reverse procedure for installation of new ignitor.


RED INDICATOR LIGHT
R
DIAGNOSTIC INDICATOR
LED MODE
On Control Fault
2 Flashes Flame, No Call for Heat
3 Flashes Ignition Lockout
ADC® P/N: 128978
TRITON 2465D 902-018
Catalog Number: TRITON 2465H
Automatic Ignition System
Prepurge: 0 Sec., Ignition: 7.0 Sec.
Interpurge: 15 Sec.
Input: 24 VAC, 50/60 Hz., 300 mA
Valve: 24 VAC, 2.0 A max.
Ignitor: 24 VAC, or 120 VAC, 5.0 A max.
Ambient: -40°F to +160°F
ANSI Z21.20 CAN/CSA-C22.2 No. 199-M89
CAUTION: HI VOLTAGE DISCONNECT WIRING BEFORE SERVICING
FC1
FC2
S1
L1
S2
W
MV1
GND
GREEN
GREEN
ORG/SLVR
2
1
GAS VALVE
RED
RED
FLAME SENSOR
24 VOLTS A/C (CONSTANT SUPPLY)
YELLOW
INPUT FROM THERMOSTATS
MAN3905
HOT SURFACE IGNITOR

> **NOTE:** Before reestablishing electrical power to the dryer, visually check the following (refer to the illustration above).

5. Reestablish electrical power to the dryer.

Flame Sensor Probe Replacement


FLAME PROBE
HOT SURFACE IGNITOR
MAN3874

1. Discontinue electrical power to the dryer.
2. Disconnect the “red” wire from the flame sensor probe which goes to S2 on the HSI (Hot Surface Ignition) module.
3. Disassemble flame sensor probe from burner by removing the one (1) self tapping screw.
4. Reverse procedure for installation of new flame sensor probe.

> **NOTE:** Before reestablishing electrical power to the dryer, visually check the following (refer to the illustration above).

5. Reestablish electrical power to the dryer.

Hot Surface Ignitor

1. Discontinue electrical power to the dryer.
2. Disconnect the hot surface ignitor wires from S1 and ground (GND) on the HSI (Hot Surface Ignition) Module.
3. Disassemble Hot Surface Ignitor probe from burner by removing the one (1) self tapping screw.
4. Reverse procedure for installation of new hot surface ignitor.

> **NOTE:** Before reestablishing electrical power to the dryer, visually check the following (refer to the illustration above).

NOTE: ***DO NOT WRAP THE HOT SURFACE IGNITOR WIRES AND THE FLAME ELECTRODE WIRE TOGETHER. IMPROPER OPERATION MAY RESULT. THEY MAY RUN ALONGSIDE EACH OTHER.***

5. Reestablish electrical power to the dryer.

Gas Valve Replacement (Refer to burner illustration on **page 22**)

1. Discontinue electrical power to the dryer.
2. Close shut-off valves in gas supply line.
3. Disconnect gas valve wiring.

NOTE: Identify location of each wire for correct reinstallation.

4. Break union connection before gas valve.
5. Loosen and remove four (4) screws securing pipe brackets to burner.
6. Remove valve and manifold assembly from dryer.
7. Remove valve mounting bracket, manifold and piping from gas valve.
8. Reverse procedure for installing new gas valve.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

Main Burner Orifices Replacement

1. Refer to "To Replace Gas Valve" and follow ***Step #1 through Step #6.***
2. Unscrew main burner orifices and replace.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

3. Reverse the removal procedure for reinstalling.

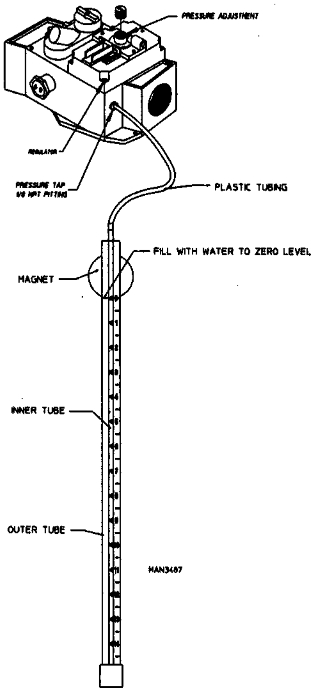
WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Test and Adjust Gas (Water Column) Pressure

There are two (2) types of devices commonly used to measure column pressure. They are spring and mechanical-type gauges and manometers. The spring and mechanical-type gauge is not recommended, because it is easily damaged and not always accurate. A manometer is simply a glass or transparent plastic tube with a scale in inches. When filled with water and pressure applied, the water in the tube rises showing the exact water column pressure.

NOTE: Manometers are available from the factory by ordering **ADC** Part No. 122804.



1. To test gas water column (W.C.) Pressure:

    a. Connect water column test gauge connection to gas valve pressure tap (1/8" NPT). This pressure tap is located on the outlet (manifold) side of the valve.

    b. Start dryer. With burner on, the correct water column reading in inches would be:
    Natural Gas - 3.5 Inches Water Column (8.7 mb).
    L.P. Gas - 10.5 Inches Water Column (26.1 mb).

2. To adjust water column pressure (natural gas only, L.P. gas **must be** regulated at source):

    a. Remove the slotted vent cap on the top of the valve.

    b. Turn the slotted adjustment screw located on the top of the valve next to the terminals. Turn clockwise (CW) to increase manifold pressure and counterclockwise (CCW) to decrease.

NOTE: If correct W.C. pressure **cannot** be achieved, problems may be due to an undersized gas supply line, a faulty or underrated gas meter, etc.

To Convert Natural Gas to L.P. Gas

NOTE: **ALL** dryers are sold as natural gas, unless otherwise specified at the time the dryer order was placed. For L.P. gas the dryer ***must be*** converted as follows.

1. Refer to "Replace Gas Valve" and follow ***Step #1 through Step #6.***

    a. For models with 3/4" White-Rodgers gas valve.

        1) Remove top vent cap.

        2) Insert spring and pin.

        3) Replace vent cap.

2. Unscrew main burner orifices and replace with L.P. orifices.

NOTE: Use extreme care when removing orifices. They are made of brass and are easily damaged.

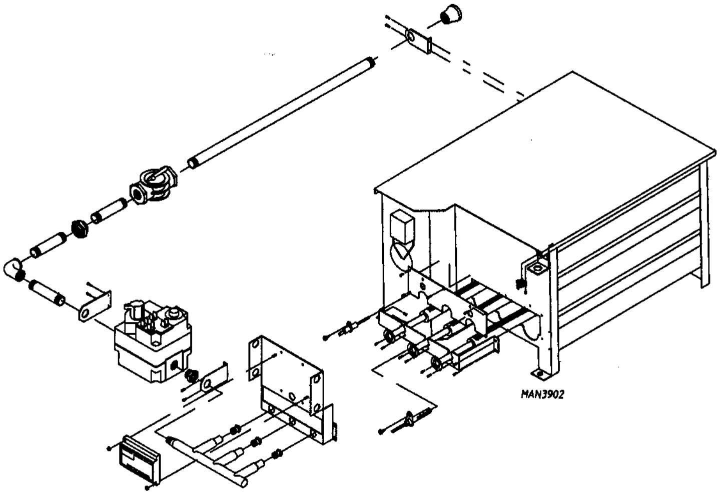
3. Reverse the procedure for reinstalling valve assembly to the dryer.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

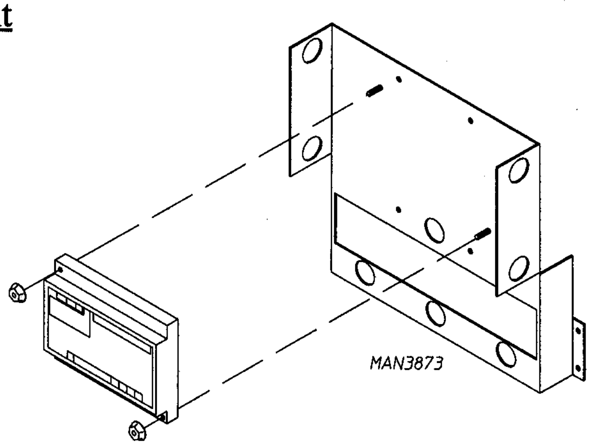
NOTE: There is no regulator provided in an L.P. dryer. The column pressure ***must be*** regulated at the source (L.P. tank) or an external regulator ***must be*** added to each dryer.

Burner Tubes Replacement



1. Refer to "Replace Gas Valve" and follow ***Step #1 through Step #6.***
2. Remove four (4) screws securing the HSI (Hot Surface Ignition) module mounting bracket.
3. Remove front flanges of the burner tubes to the burner tube rest.
4. Remove the screws securing the burner tube rest to the oven and remove this rest.
5. Remove screws securing burner box cover plate to the oven and remove the cover.
6. Remove burner tubes by sliding them out.
7. Replace by reversing procedure.

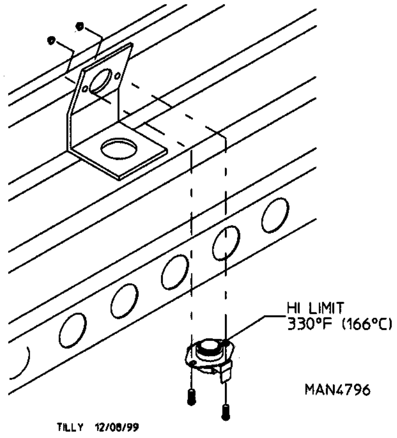
HSI (Hot Surface Ignition) Module Replacement



1. Discontinue electrical power to the dryer.
2. Remove the wires connected to the terminal strip at the bottom of the module. (Mark correct location of each wire to aid in replacement on new module).
3. Remove the four (4) pal nuts securing the module to the mounting bracket.
4. Replace module by reversing procedure.
5. Reestablish electrical power to the dryer.

C. THERMOSTATS

Manual Reset Burner Hi-Limit (330° F [166° C]) Thermostat Replacement (Gas Models Only)



1. This thermostat is an important safety device as an added protection against failure of the airflow (sail switch) to open in the event of motor failure or reduced airflow conditions.

IMPORTANT: UNDER NO CIRCUMSTANCES should heat circuit safety devices ever be disabled.

NOTE: Models manufactured as of 1998 are equipped with a manual reset hi-limit thermostat.

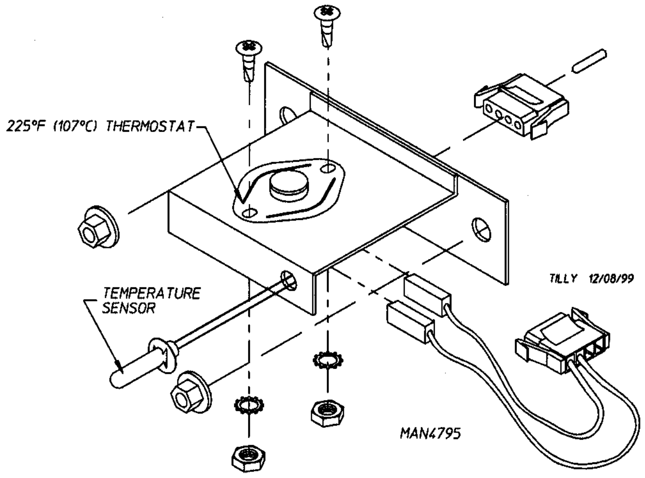
1. Discontinue electrical power to the dryer.
2. Disconnect wires from hi-limit thermostat.
3. Remove the two (2) screws, washers and nuts securing thermostat to the bracket. Remove thermostat.
4. Reversing procedure for installing new thermostat.
5. Reestablish electrical power to the dryer.

Manual Reset Tumbler Hi-Limit Thermostat (225° F [107° C]) Replacement

This thermostat is part of the "sensor bracket assembly" and is secured to the underside of the basket wrapper in the lint compartment. As a safety device, this thermostat will open (shut off) the heating unit circuit if an excessive temperature occurs. The dryer motor will remain on, even if the thermostat is open.

1. Disconnect electrical power to the dryer.
2. Open lint door.
3. Locate sensor bracket assembly remove the two (2) bolts securing bracket assembly to the tumbler (basket) wrapper.

NOTE: ***DO NOT*** remove the screws.

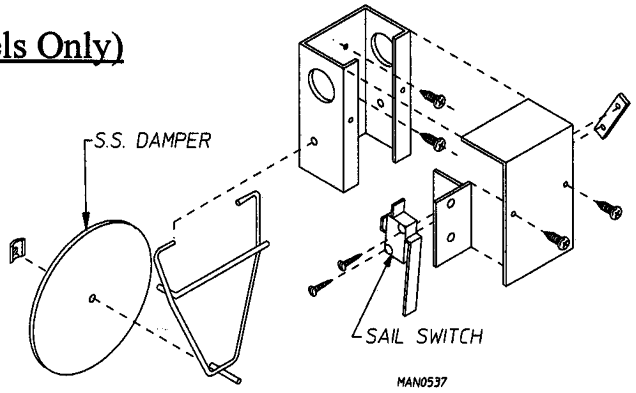


4. Remove bracket assembly by slightly sliding bracket toward the rear of the dryer and to the left.
5. Disconnect sensor bracket harness connector and remove bracket assembly from dryer.
6. Disconnect the two (2) "orange" wires from the thermostat.
7. Disassemble thermostat from bracket assembly by removing the two (2) mounting screws, washers and nuts.
8. Reverse this procedure for installing a hi-heat protector thermostat.

9. Reestablish electrical power to the dryer.

D. SAIL SWITCH ASSEMBLY (Gas Models Only)

The sail switch is a heat circuit safety device which controls the burner circuit only. When the dryer is operating and there is proper airflow, the sail switch damper pulls in and closes the sail switch. Providing **ALL** the other heat-related circuits are functioning properly, ignition **should now be** established. If an improper airflow occurs, the sail switch damper will release, and the circuit will open.



Sail Switch Replacement

1. Discontinue electrical power to the dryer.
2. Remove the two (2) screws which hold the sail switch box cover to sail switch box.
3. Disconnect the two (2) wires from the switch.
4. Disassemble sail switch from mounting bracket by removing the two (2) screws securing switch in place.
5. Reverse this procedure for installing new sail switch. Adjust sail switch as described in the next section.

Sail Switch Adjustment

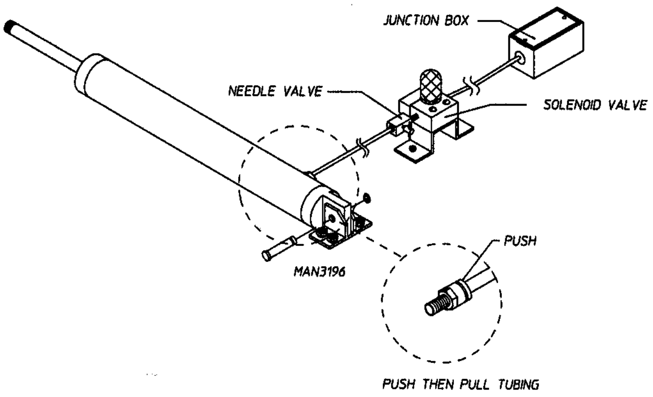
With the dryer operating at a high temperature setting, pull the sail switch away from the burner. The sail switch should open and extinguish the burner. Let the sail switch damper return to the burner wall. The sail switch should close to restart the burner ignition cycle. If the sail switch circuit does not operate as described, bend the actuator arm of the sail switch accordingly until proper operation is achieved. To check proper "open" position of sail switch, open main door, manually depress main door switch and start dryer. With the main door open and the dryer operating, the sail switch **should be** open, and the burner should not come on.

E. STEAM DAMPER ACTUATOR SYSTEM SERVICE and REPLACEMENT

Steam Damper Cylinder or Piston Replacement

1. Disconnect compressed air supply from the dryer.
2. Disconnect tubing from the piston.
3. Remove the spring clip from clevis pin then slide out the clevis pin.
4. Remove the steam damper cylinder (piston).
5. To install new steam damper cylinder (piston), reverse above procedure (***Step #4 through Step #1***).

Steam Solenoid Valve Replacement


JUNCTION BOX
NEEDLE VALVE
SOLENOID VALVE
PUSH
MAN3196
PUSH THEN PULL TUBING

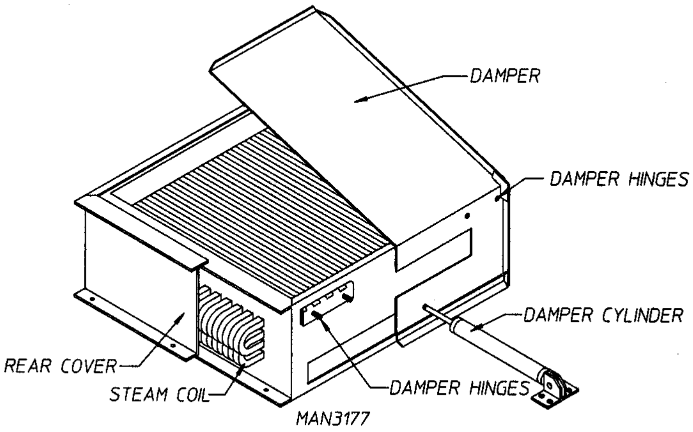
1. Disconnect compressed air supply from the dryer.
2. Discontinue electrical service to the dryer.
3. Disconnect wires in junction box.
4. Remove tubing from the inlet side of the valve.
5. Remove the valve from the bracket.
6. Unscrew the valve from the outlet side.
7. To install new steam solenoid valve, reverse above procedure (***Step #6 through Step #1***).

Needle Valve Replacement

1. Disconnect compressed air supply from the dryer.
2. Remove tubing from the valve.
3. Unscrew needle valve from the solenoid valve.
4. To install new needle valve, reverse above procedure (***Step #3 through Step #1***).

Steam Coil Replacement

1. Discontinue electrical service to the dryer.
2. Disconnect compressed air supply from the dryer.
3. Shut off **ALL** steam supply lines and steam return valves that feed the steam coil.
4. Wait a sufficient amount of time until **ALL** of the steam lines and the steam coil is cool.
5. Open 1/2" plug on the return line to bleed off any residual steam pressure.


DAMPER
DAMPER HINGES
DAMPER CYLINDER
REAR COVER
STEAM COIL
DAMPER HINGES
MAN3177

CUT AWAY VIEW OF STEAM COIL ASSEMBLY

CAUTION: MAKE CERTAIN THAT THE ENTIRE STEAM SYSTEM (coil, lines, valves, etc.) ARE COOLED TO AVOID HOT STEAM ESCAPING and TO AVOID PERSONAL INJURY.

6. Remove steam coil damper cylinder (piston).
7. Remove the steam coil damper by unbolting from its hinges.
8. Disconnect steam supply lines and steam return lines at the unions.

9. Remove the remaining piping from the steam coil.

10. Remove ALL of the panels surrounding the steam coil.

11. Unbolt the steam coil and remove.

WARNING: The steam coil is heavy. A crane may be needed to remove (and install) the steam coil.

12. Remove the steam coil damper hinges from the old coil and install them on the new steam coil.

13. Hoist the new steam coil into place and bolt down.

14. Replace ALL of the panels removed in ***Step #10***.

15. Reinstall ALL of the piping removed from the old steam coil in ***Step #9***.

NOTE: Thread sealant certified for steam piping ***must be*** applied to the threads.

16. Reconnect ALL of the piping (supply lines and return lines) disconnected in ***Step #8***.

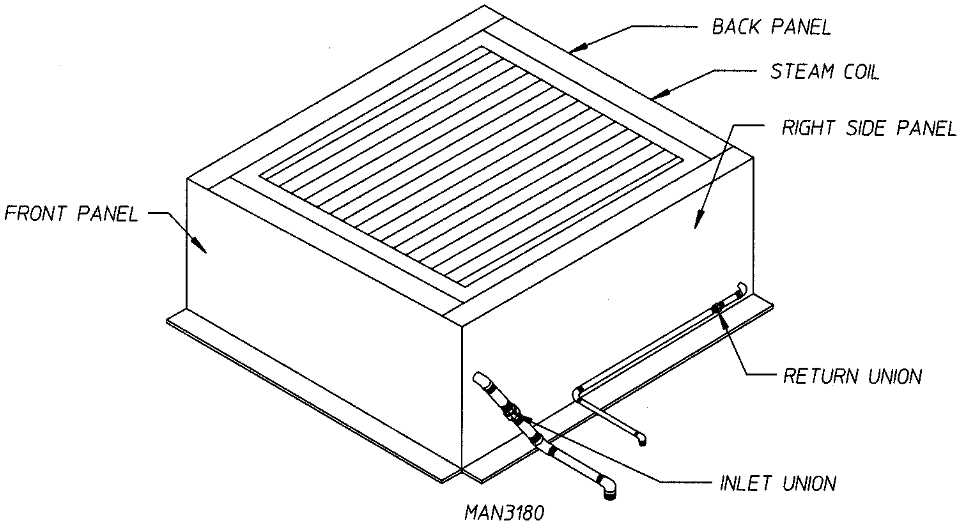
17. Reinstall steam damper cylinder (piston) removed in ***Step #6***.

18. Reestablish electrical service to the dryer.

19. Close the 1/2" plug which was opened in ***Step #5***.

WARNING: THE 1/2" PLUG *MUST BE* CLOSED BEFORE ATTEMPTING TO APPLY ANY STEAM PRESSURE.

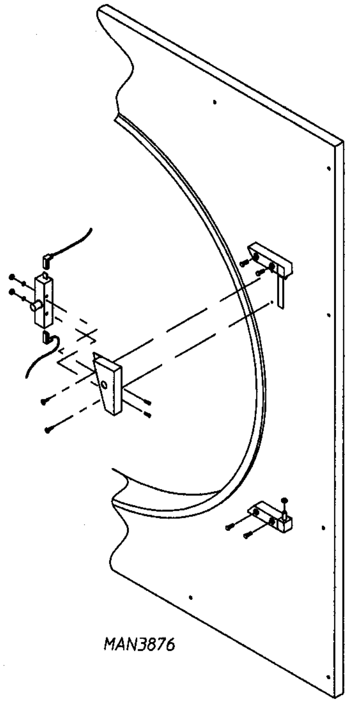
20. *Slowly* open the return line then *slowly* open the supply line.



VIEW OF STEAM COIL w/ DAMPER REMOVED

CAUTION: ***DO NOT*** abort this switch by taping or screwing sail switch damper to burner. **PERSONAL INJURY or FIRE COULD RESULT.**

F. FRONT PANEL and MAIN DOOR ASSEMBLIES



CURRENT PRODUCTION

Main Door Switch Replacement

1. Discontinue electrical power to the dryer.
2. Open main door.
3. Remove the two (2) Phillips head screws holding the main door switch bracket assembly in place.
4. Disconnect wiring from switch assembly.
5. Reverse this procedure for installing new door switch assembly.
6. Reestablish electrical power to the dryer.

IMPORTANT: **UNDER NO CIRCUMSTANCES** should the door switch be disabled.

Main Door Assembly Replacement

1. Open main door.
2. Holding the door upward remove the two (2) screws from the top hinge block.
3. Lift the door up to remove.
4. Reverse this procedure for reinstalling new main door assembly.

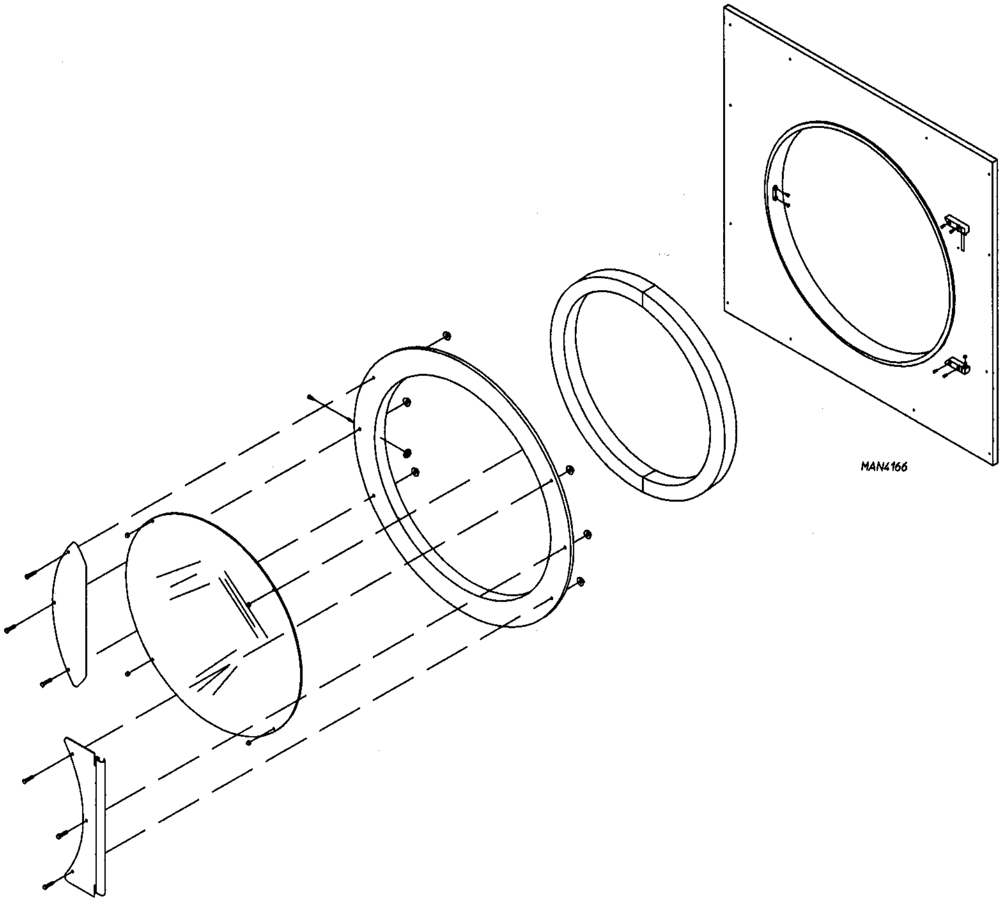
To Install New Main Door Glass

1. Remove main door assembly from dryer (follow main door removal procedure).
2. Lay main door on flat surface with the back of the door facing down.
3. Remove the four (4) #10-32 acorn nuts securing the glass to the door.
4. Remove glass and clean **ALL** old sealant off main door. This area **must be** clean for correct bonding.
5. Place a bead of silicone (**ADC** P/N 170730) around the edge door and lightly press glass into place.
6. Reinstall the four (4) #10-32 acorn nuts that were removed in ***Step #3***.

IMPORTANT: ***DO NOT*** press hard or silicone thickness between the glass and door **will be** reduced, resulting in poor bonding.

7. The door assembly **should now be** put in an area where it will not be disturbed for at least 24 hours. Depending on the conditions, the curing time of this adhesive is 24 to 36 hours.

8. After the curing period, install main door on dryer by reversing ***Step #1***.



Front Panel Replacement

1. Discontinue electrical power to the dryer.
2. Remove bottom lint drawer assembly.
3. Remove the screws securing the front panel to the dryer.
4. Disconnect the two (2) door switch wires located behind the front panel.
5. Remove the front panel.

IMPORTANT: When pulling the front panel off, the door switch harness in the upper right hand corner ***must be*** unplugged.

NOTE: The main door assembly can be removed to make the panel removal easier. Refer to "Replace Main Door Assembly" directions.

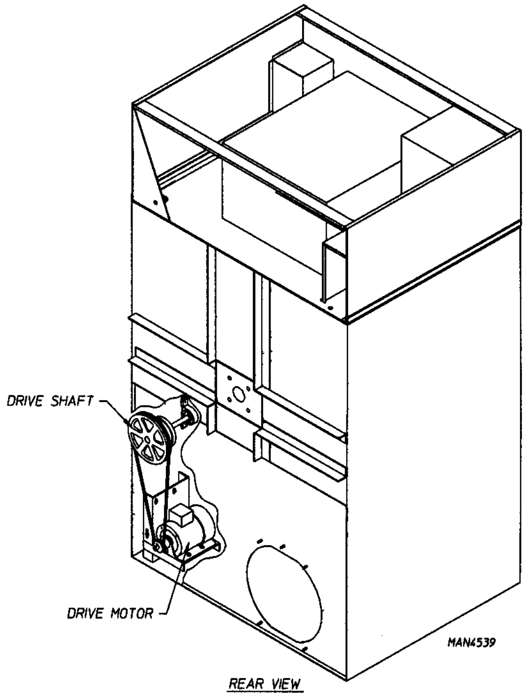
6. Reinstall the new front panel by reversing ***Step #1 through Step #4***.
7. Reestablish electrical power to the dryer.

Main Door Hinge Block Replacement

1. Discontinue electrical power to the dryer.
2. Follow procedure for removal of main door assembly for top hinge removal.
3. Remove the two (2) screws from the bottom hinge block.
4. Reassemble by reversing removal procedure.
5. Reestablish electrical power to the dryer.

G. PULLEYS

Drive Shaft Pulley Replacement



1. Discontinue electrical power to the dryer.
2. Remove front panel from dryer (Follow front panel replacement directions on **page 28**.)
3. Loosen V-belts. Rotate pulley and roll V-belts out of grooves.
4. Remove set screw from the 9" (22.86 cm) pulley.
5. Remove pulley and key.

NOTE: A gear puller may be required to remove pulley.

6. Reverse this procedure for replacement.

NOTE: Pulley ***must be*** aligned for proper operation.

Drive Motor Pulley Replacement

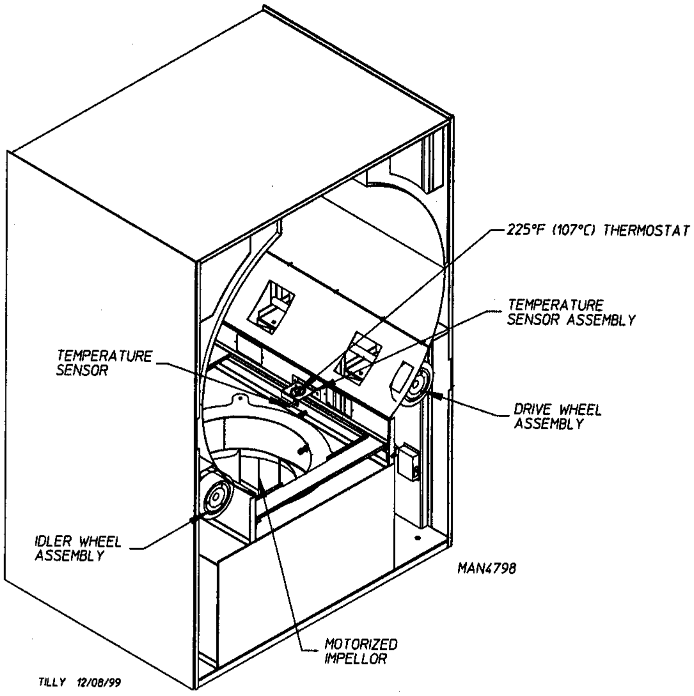
1. Discontinue electrical power to the dryer.
2. Remove front panel from the dryer. (Follow front panel replacement directions on **page 28**).
3. Loosen V-belts. Rotate pulley and roll V-belt out of groove.
4. Remove set screw from the drive motor pulley.
5. Remove pulley and key.

NOTE: A gear puller may be required to remove pulley.

6. Reverse this procedure for replacement.

NOTE: Pulleys ***must be*** aligned for proper operation.

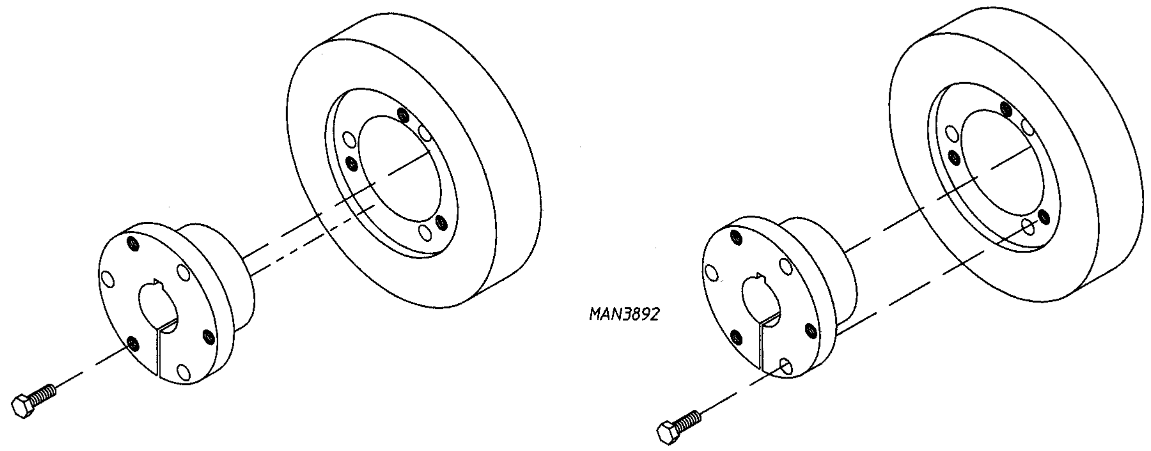
H. TUMBLER WHEEL REPLACEMENT ON DRIVE ASSEMBLY (Taper Lock Models)


225°F (107°C) THERMOSTAT
TEMPERATURE SENSOR ASSEMBLY
TEMPERATURE SENSOR
DRIVE WHEEL ASSEMBLY
IDLER WHEEL ASSEMBLY
MAN4798
MOTORIZED IMPELLOR
TILLY 12/08/99

1. Discontinue electrical power to the dryer.
2. Remove front panel from dryer. (Follow front panel replacement directions on **page 28**.)
3. Remove the ten (10) 1/4-20 x 1/4" socket button head screws from the perforated basket side.
4. Remove wrapper assembly.
5. Loosen V-belts. Rotate pulley and V-belts out of the groove.
6. Block the tumbler (basket) assembly in position.
7. Mark the position of pillow block bearing then remove the bolts from the pillow block bearings.
8. Remove the drive shaft assembly through the front of the machine.
9. Remove the set screw from the 9" (22.86 cm) pulley.
10. Remove the pulley and key.

NOTE: A gear pulley may be required to remove the pulley.

11. Remove cap screws from bushing.
12. Insert cap screws in the tapped removal holes and tighten evenly until bushing becomes loose on shaft.
13. Remove the bushing, tumbler wheel, and key.
14. Reverse this procedure for replacement.



TUMBLER WHEEL REMOVAL

TUMBLER WHEEL INSTALLATION

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 30 ft-lbs. (41 Nm). If greater tightening forces are applied, excess pressure **will be** created in the hub of the mounted sheave which may cause it to crack.

I. TUMBLER WHEEL REPLACEMENT ON IDLER ASSEMBLY (Taper Lock Models)

1. Disconnect electrical power to the dryer.
2. Remove the front panel from the dryer. (Follow front panel replacement directions on **page 28**.)
3. Remove the ten (10) 1/4-20 x 1/4" socket button head screws from the perforated basket side.
4. Remove the wrapper assembly.
5. Block the tumbler (basket) assembly in position.
6. Mark the position of the pillow block bearings. Then remove the bolts from the pillow block bearing.
7. Remove the idler shaft assembly through the front of the machine.
8. Remove the cap screws from bushing.
9. Insert cap screws in the tapped removal holes and tighten evenly until bushing becomes loose on shaft.
10. Remove the bushing, tumbler wheel, and key.
11. Reverse this procedure for replacement.

J. BASKET ASSEMBLY

NOTE: Dryer ***must be*** level prior to tumbler (basket) alignment.

1. Discontinue electrical power to the dryer.
2. Remove the perforated tumbler (basket) panel.
3. Remove wrapper panel to access the drive and idler shaft.
4. Place a level on the shafts to verify if level.
5. Measure distance between tumbler (basket) and wrapper 1/2" to 3/4" gap **should be** derived.
6. Loosen the eight (8) bolts on the pillow block bearings and turn the adjustment screw clockwise (CW) or counterclockwise (CCW) to increase or decrease the gap between the tumbler (basket) and wrapper.
7. Measure the length of the adjustment bolts and **ALL should be** equal.
8. Place a level on the shaft to verify it is level if any adjustment has been made.
9. Check the basket drive belt for proper tension. Adjust if necessary.
10. Replace the wrapper panels.
11. Replace the perforated tumbler (basket) panel.

K. 1-15/16 (5 CM) FLANGE BEARING REPLACEMENT

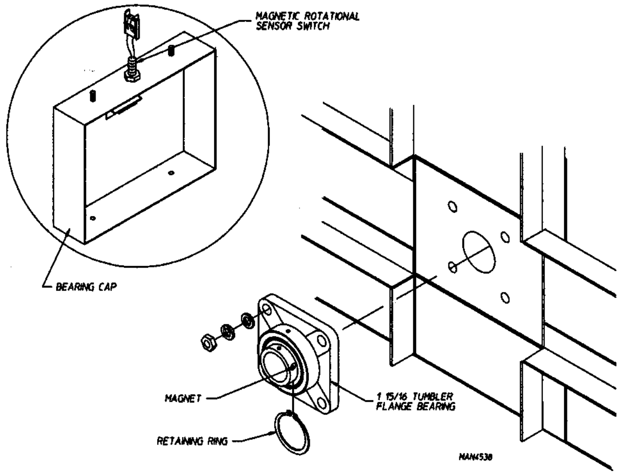
1. Disconnect electrical power to the dryer.
2. Remove the four (4) bolts securing the bearing cap located in the rear of the dryer. And remove.
3. Depress the tabs on the rotational sensor harness plug and pull apart.
4. Remove the retaining ring from the tumbler shaft.
5. Remove the four (4) bolts, lock washers and flat washers securing the flange bearing to the dryer cabinet.
6. Loosen the set screws from the flange bearing.
7. Remove the flange bearing from the tumbler shaft.
8. To replace new flange bearing reverse ***Step #2 through Step #8.***
9. Reestablish electrical power to the dryer.

L. ROTATIONAL SENSOR ASSEMBLY

The Rotational Sensor Assembly is located in the rear of the dryer. It consists of a magnet. Rotational Sensor switch which is mounted to the bearing cap. The magnet is screwed into the 1-15/16" (5 cm) Flange Bearing.

The magnetic rotational sensor switch senses the rotation of the tumbler (basket). If the gap between the sensor switch and the magnet is greater than a preset amount, then the dryer will shut down on "SEFL" ("rotational sensor failure").

Rotational Sensor Switch Replacement


MAGNETIC ROTATIONAL SENSOR SWITCH
BEARING CAP
MAGNET
1 15/16 TUMBLER FLANGE BEARING
RETAINING RING
MAN4538

1. Discontinue electrical power to the dryer.

2. Remove the bearing cap from the dryer.

3. Remove the adjustment nut from the bearing cap.

4. Remove the magnetic rotational sensor switch from the bearing cap.

5. Depress the tabs on the rotational sensor harness plug and pull apart, then remove the sensor switch.

6. To install a new sensor switch, connect the plug of the new sensor switch to the sensor harness.

7. Place one (1) adjustment nut onto the sensor switch and insert into the bearing cap.

8. Place the second adjustment nut on but **DO NOT TIGHTEN**. The magnet on the Flange Bearing and the sensor switch **must be** in a horizontal line to one another.

9. The gap between the magnet and the sensor switch **must be** 1/8-inch.

10. Tighten the adjustment nuts installed in ***Step #6 and Step #7***.

11. Reestablish electrical power to the dryer.

M. IDLER SHAFT PILLOW BLOCK BEARING REPLACEMENT

1. Refer to tumbler wheel replacement on idler assembly **page 31**.

2. Complete ***Step #1 through Step #11***.

3. Remove both set screws from each pillow block bearing.

4. Remove pillow block bearing from shaft.

5. Reverse this procedure for replacement.

NOTE: Once the shaft assembly has been installed into dryer. Return pillow block bearings to the marked position and tighten set screws.

6. Refer to basket assembly section **page 32** for shaft and basket alignment.

N. DRIVE ASSEMBLY PILLOW BLOCK BEARING REPLACEMENT

1. Refer to tumbler wheel replacement on drive assembly **page 30.**
2. Complete ***Step #1 through Step #14***.
3. Remove both set screws from each pillow block bearing.
4. Remove pillow block bearings from shaft.
5. Reverse this procedure for replacement.

NOTE: Once the shaft assembly has been installed into dryer. Return pillow block bearing to the marked position and tighten set screws.

6. Refer to basket assembly section **page 32** for shaft and basket alignment.

O. V-BELT ADJUSTMENT (Motor to Drive Axle)

1. Discontinue electrical power to the dryer.
2. Remove the belt guard cover from the rear of the dryer.
3. Loosen the four (4) bolts holding the drive motor mount to the side of the dryer.
4. Loosen the jam nuts on the adjustment screw on the top of the motor mount.
5. Turn the adjustment screw to lower the motor mount (to tighten the belts) or raise the motor mount (to loosen the belts.)
6. Check the vertical plane of the motor and idler pulleys for parallel adjustment.
7. If realignment is required, loosen motor pulley and bushing, and move motor pulley to proper position.
8. Retighten motor mount bolts and jam nuts.
9. Assemble front panel lint door assemblies back to dryer.
10. Reestablish electrical power to the dryer.

Drive Motor V-Belts Replacement

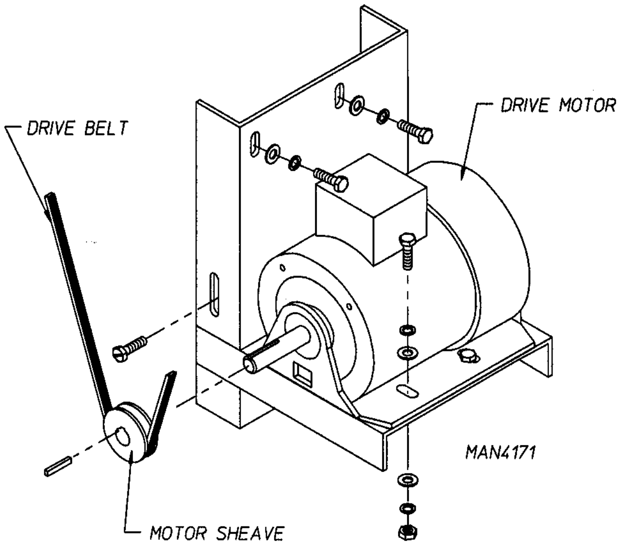
1. Discontinue electrical power to the dryer.
2. Remove the belt guard cover from the rear of the dryer.
3. Loosen tension on V-belt so that it can easily be rolled off pulley. This can be done by loosening the four (4) bolts holding the motor to the side of the dryer, as well as the adjustment bolt on top.

4. Replace V-belt.

5. Retighten V-belt and adjust tension and alignment per previous instructions.

P. MOTORS

Drive Motor Replacement



1. Discontinue electrical power to the dryer.

2. Remove the belt guard cover from the rear of the dryer.

3. Remove drive belt.

4. Disconnect wiring harness from motor.

5. Remove bolts holding motor to mount and replace with new motor. **DO NOT TIGHTEN BOLTS.**

6. Remove pulley from old motor and install on new motor. By removing the set screw from the drive motor pulley.

NOTE: A gear puller may be required to remove pulley.

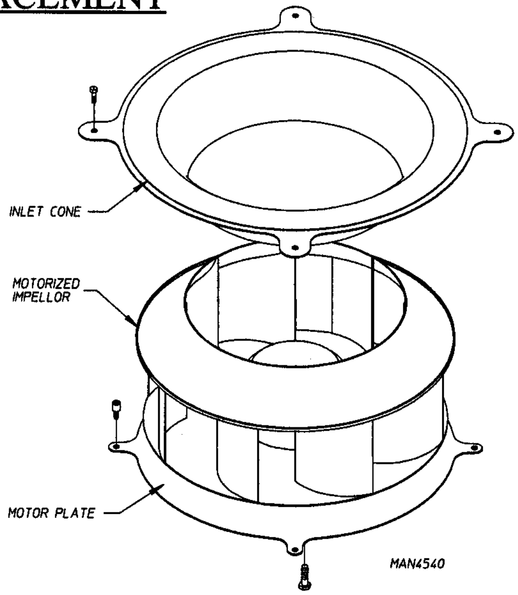
7. Align motor pulley with drive assembly pulley and tighten set screw holding motor pulley.

8. Replace belts and adjust belt tension.

9. Retighten bolts.

10. Reestablish electrical power to the dryer.

Q. MOTORIZED IMPELLOR (BLOWER) REPLACEMENT



1. Discontinue electrical power to the dryer.

2. Remove lint draw.

3. Remove the perforated panel inside the tumbler (basket).

4. Remove the bolts securing the inlet cone.

5. Remove the inlet cone.

6. Remove the bolts securing the motor plate to the dryer cabinet.

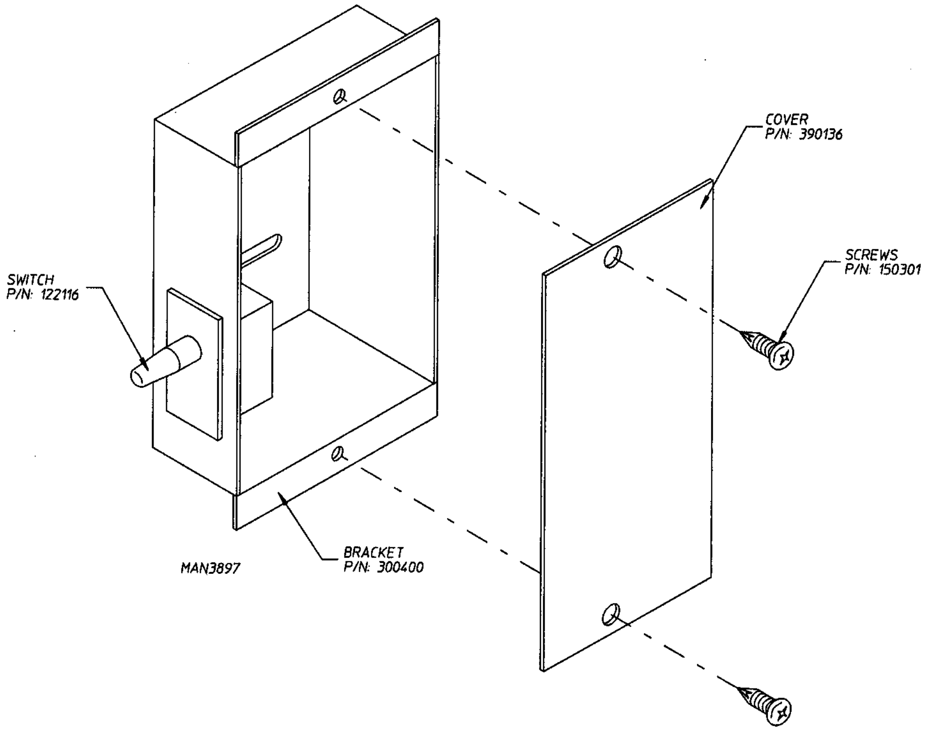
7. Remove the motorized impellor along with the motor plate.

NOTE: The motorized impellor assembly **will not be** able to be removed due to the wiring harness still connected.

8. Disconnect the wiring harness from motor.
9. Remove the motor plate from the motorized impellor and install it on the new motor.
10. Reconnect the wiring harness to the motor.
11. To replace new motorized impellor assembly, reverse ***Step #2 through Step #10***.
12. Reestablish electrical power to the dryer.

R. LINT DOOR SWITCH REPLACEMENT

1. Discontinue electrical power to the dryer.
2. Remove the lint door panel.
3. Remove the front panel.
4. Disconnect both 4-pin connectors at the rear of the lint switch cover.
5. Remove the two (2) screws holding the lint switch cover on.
6. Remove the lint switch cover and disconnect the two (2) terminals of the switch.
7. Remove switch by pressing tabs together and pushing switch out.
8. Install new switch by reversing these procedures.



SECTION VI

TROUBLESHOOTING

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

The information provided will help isolate the most probable component(s) associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken/shorted wire may be at fault where electrical components are concerned...and not necessarily the suspected component itself.

IMPORTANT: When replacing blown fuses, the replacement ***must be*** of the exact rating as the fuse being replaced. The information provided ***should not be*** misconstrued as a handbook for use by an untrained person in making repairs.

WARNING: ALL SERVICE and TROUBLESHOOTING *SHOULD BE* PERFORMED BY A QUALIFIED PROFESSIONAL or SERVICE AGENCY.

WARNING: WHILE MAKING REPAIRS, OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE DRYER or SPECIFIED IN THIS MANUAL.

A. No L.E.D. (light emitting diode) display on microprocessor controller (computer)...

1. Open circuit breaker switch or blown fuse.
2. Tripped blower motor overload.
3. Faulty wiring connection.
4. Faulty transformer.
5. "EMERGENCY STOP" (E-Stop) button is depressed.
6. Faulty microprocessor controller (computer).

B. Computer will not accept keyboard (touchpad) entries...

1. Keyboard (touchpad) ribbon is not plugged into computer securely.
2. Faulty keyboard (touchpad).
3. Faulty microprocessor controller (computer).

C. Dryer will not start, but computer L.E.D. (light emitting diode) indicators are on...

1. Failed contactors.
2. Failed arc suppressor (A.S.) board.
3. Failed microprocessor controller (computer).
4. Failed motors.

D. Drive motor runs, burner is on, but tumbler (basket) will not turn...

1. Broken, damaged or loose V-belt.
2. Belts contaminated (oil, grease, etc.).
3. Loose or broken pulley.

E. Dryer operates but is taking too long to dry...

1. Improperly programmed microprocessor controller (computer).
2. An inadequate exhaust duct work system.
3. Restriction in exhaust system.
4. Insufficient make-up air.
5. Poor housekeeping.
   a. Dirty or clogged lint screen.
6. Washing machine extractors are not performing properly.
7. An exceptionally cold/humid or low barometric pressure atmosphere.
8. The supply gas may have a low heating valve, check with local gas supplier.
9. Failed temperature sensor (temperature calibration is incorrect).
10. Failed microprocessor controller (computer).

F. Thermal overload for drive motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Motor vents are blocked with lint.
4. Failed motor.
5. Failed overload.
6. Out of balance impellor (fan).
7. Insufficient make-up air.

G. Overload for impellor (fan) motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Motor vents are blocked with lint.
4. Failed motor.
5. Failed overload.
6. Insufficient make-up air.

H. Burner hi-limit safety thermostat is tripping...

1. Insufficient exhaust duct work, size or restriction in exhaust system.
2. Insufficient make-up air.
3. Lint screen needs cleaning.
4. Damaged impellor.

NOTE: For models with the manual reset hi-limit thermostat refer to **page 15**.

I. L.E.D. (light emitting diode) display reads "Temp Sensor Failure Check Temp Sensor Fuse." Dryer Sensor Circuit Failure...

1. Check 1/8-amp fuse on microprocessor controller (computer).
2. Faulty microprocessor controller (computer) temperature sensor probe.
3. Open circuit in either one of two (2) wires leading from the sensor probe to the computer...
    a. Connection at sensor bracket assembly connector.
    b. Connection at computer harness connector.
4. Faulty microprocessor controller (computer).

J. Dryer does not start. Display reads "main door" or "lint door" with an audio indication...

1. Main door is open.
2. Lint drawer is open.
3. Faulty main door or lint door switch.
4. Open circuit in either main door or lint drawer switch harnesses.
5. Faulty 24 VAC transformer.

K. There is excessive vibration coming from the tumbler (basket)...

1. Tumbler (basket) is out of adjustment.
2. Drive shaft or idler shaft is out of alignment.
3. Faulty pillow block bearing.
4. Faulty tumbler (basket) wheel.
5. Drive motor and shaft not aligned.

SECTION VII

PHASE 6 OPL SYSTEM DIAGNOSTICS

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

ALL major circuits, including door, microprocessor temperature sensor, heat and motor circuits are monitored. The Phase 6 OPL microprocessor controller (computer) will inform the user, via the L.E.D. (light emitting diode) display of certain failure codes, along with indicators both in L.E.D. (light emitting diode) display and at the output of each relay (and door switch circuit) to easily identify failures.

A. DIAGNOSTIC (L.E.D. [Light Emitting Diode] DISPLAY) FAILURE CODES

1. **SAIL SWITCH FAIL-** This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is closed prior to start up the display will read "SAIL SWITCH FAIL" along with an audio indication.

2. **No AIRFLOW-** If the sail switch opens during cycle operation the display will read "No AIRFLOW" along with an audio indication. The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "No AIRFLOW" with an audio indication.

3. **bURNER SAFETY FAIL-** Routine monitors the temperature above the burner. If the burner hi-limit switch opens the display will read "bURNER SAFETY FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "bURNER SAFETY FAIL" with an audio indication.

4. **dRUM SAFETY FAIL-** This routine monitors the tumbler (basket) temperature if the tumbler (basket) hi-limit switch opens prior or during the cycle while the heat was on the machine will display "dRUM SAFETY FAIL." The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "dRUM SAFETY FAIL" with an audio indication.

5. **No HEAT-** This routine monitors the burner ignition. If the burner mis-ignites (does not light) the HSI (Hot Surface Ignition) module will check to see of the microprocessor program has any retries left. The standard retry count is two (2). If the module notices that there are retries left it will purge for one (1) minute then try to ignite the burner again. The HSI (Hot Surface Ignition) module will try this for a total of three (3) times or until there are no retries left. If the burner does not ignite after three (3) attempts the L.E.D. (light emitting diode) display will display the error code "no heat" with an audio indication. When this occurs the machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C).

IMPORTANT: For other countries, such as Australia, the retry count *may not* apply due to local approvals.

6. **bURNER CONTROL FAIL-** This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the Phase 6 microprocessor controller (computer) determines the ignition control has failed. If this occurs when the cycle is active the machine will display "bURNER CONTROL FAIL." If the tumbler temperature is above 100° F (38° C) the machine will continue to display "bURNER CONTROL FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler temperature is below 100° F (38° C) upon failure the machine will shut down and display "bURNER CONTROL FAIL" with an audio indication.

7. **bURNER FLAME FAIL-** This routine allows two (2) flame out retries to occur before proceeding into the error. The count of two (2) will be established every time the call for heat was to occur. Only if it reaches the count of two (2) before the tumbler temperature has reached the set temperature will this error be triggered. The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler temperature is below 100° F (38° C) upon failure, the machine will shut down and display "bURNER FLAME FAIL" with an audio indication. This process will occur every time the heat output is active.

8. **MAIN DOOR-** This monitors the door circuit. If the machine was not active and the main door was opened the display would read "READY." If a program attempt was made with the main doors open the display will read "MAIN dOOR" with an audio indication. If the machine is active and the main door was opened the display would read "MAIN dOOR" with no audio indication and the dryer will shut down. Once the main door has closed the display would read "PRESS START" press the "ENTER/START" key and it will continue the programmed cycle.

9. **LINT dOOR-** This monitors the lint drawer and door circuit. If the machine was not active and the lint drawer and door was opened the display would read "READY." If a program attempt was made with the lint drawer and door open the display would read "LINT dOOR" with an audio indication. If the machine is active and the lint drawer and door was opened the display would read "LINT dOOR" with no audio indication and the dryer will shut down. Once the lint door was closed the display would read "PRESS START" press the "ENTER/START" key and it will continue the programmed cycle.

10. **TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE-** This routine monitors the tumbler temperature. When the temperature sensor or fuse opens with the machine not active the display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the machine was active at the time that the temperature sensor or fuse opened the display would read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE." If the tumbler temperature is above 100° F (38° C) the machine will continue to display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication and run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler temperature is below 100° F (38° C) upon failure the machine will shut down and display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. The display will continue to read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" an audio indication will sound for approximately 5 seconds, every 30 seconds until the problem is corrected or the power to the dryer is disconnected (and the problem is corrected).

NOTE: Once the Phase 6 microprocessor controller (computer) detects a problem in the heat circuit, it updates every 30 seconds, so that if the problem was a loose connection in the circuit which corrected itself, the "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" condition would automatically be cancelled and the display will return to "READY."

11. **ROTATE SENSOR FAIL-** Indicates a rotational sensor circuit failure meaning that there is a fault somewhere in the tumbler (basket) rotating circuit, or the Phase 6 OPL microprocessor controller (computer) program related to this circuit (program location 2) is set incorrectly. In the active mode it **should be** (ROTATE SENSOR ACTIVE), if the dryer is not equipped with the optional rotational sensor it **should be** set in the nonactive mode (No ROTATE SENSOR).

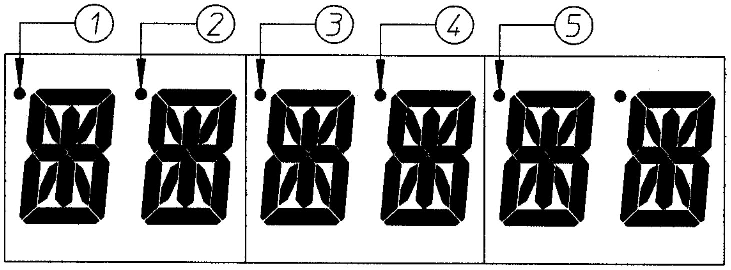
NOTE: **RPM-** This routine monitors the timing response from the existing rotational sensor input and derives a RPM measurement. To display this RPM measurement (press the "ENTER/START" key once and release, then press the "ENTER/START" key a second time and hold. This will display the RPM measurement). The rotational sensor ***must be*** active for operation of this feature.

12. **CHECK MAIN FUSE-** Indicates that the circuit fuse protection which is located on the back side of the Phase 6 microprocessor controller (computer) the display would read "CHECK MAIN FUSE." If the display continues after the fuse has been replaced then it is the fault of the Phase 6 microprocessor controller (computer).

B. L.E.D. (light emitting diode) DISPLAY INDICATORS

The L.E.D. (light emitting diode) indicator dots located on the top portion of the display indicates various Phase 6 OPL computer output functions while a cycle is in progress. These indicator dots (as shown in the illustration below) **DO NOT** necessarily mean that the outputs are functioning. They are only indicating that the function output **should be** active (on).

1. **L.E.D. DISPLAY INDICATOR NUMBER 1**



MAN3450

a. For Optional Reversing Models:

1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the forward mode (clockwise [CW] direction).

2. **L.E.D. DISPLAY INDICATOR NUMBER 2**

a. For Optional Reversing Models:

1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the reverse mode (counterclockwise [CCW] direction).

3. **L.E.D. DISPLAY INDICATOR NUMBER 3**

a. Heat Circuit Indicator:

1) This indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating circuit to be active (on).

4. L.E.D. DISPLAY INDICATOR NUMBER 4

a. On Indicator:

1) This indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle program is active, the indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time program.

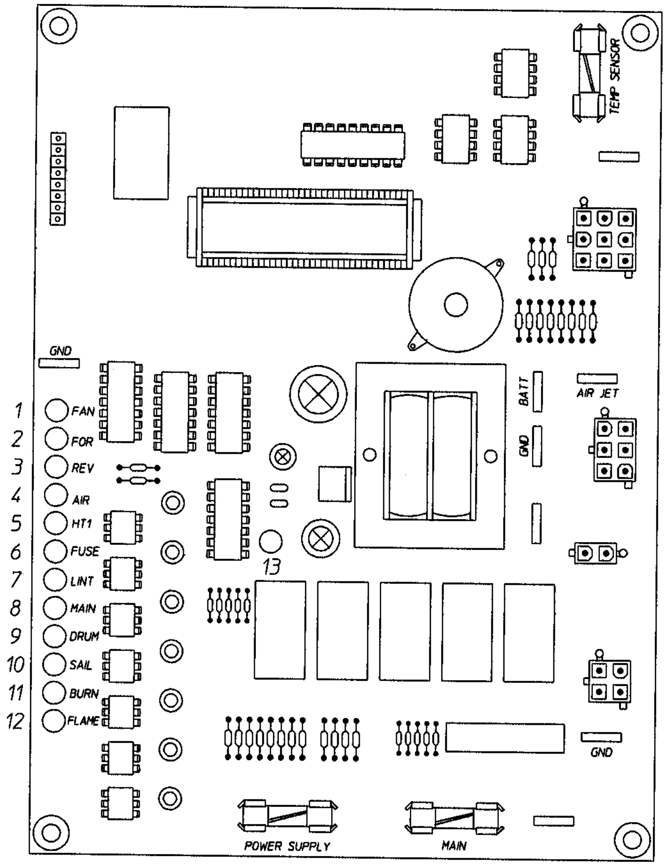
5. L.E.D. DISPLAY INDICATOR NUMBER 5

a. Air Jet Circuit - ***OPTIONAL***

1) This indicator dot is on at the end of the dryer cycle for approximately 60 seconds.

C. PHASE 6 OPL MICROPROCESSOR CONTROLLER (COMPUTER) RELAY OUTPUT L.E.D. (light emitting diode) INDICATORS

There are a series of five (5) L.E.D. indicators (ORANGE LIGHTS) located at the backside of the Phase 6 OPL microprocessor controller (computer). These are identified or labeled (from top to bottom in the illustration below as: FAN-BLOWER, FOR-FORWARD, REV-REVERSE, AIR-AIR-JET, HT1-HEAT OUTPUT. There are a series of seven (7) L.E.D. indicators (red lights) FUSE-MAIN FUSE, LINT-LINT DOOR, MAIN-MAIN DOOR, DRUM-TUMBLER HI-LIMIT, SAIL-SAIL SWITCH, BURN-BURNER HI LIMIT, FLAME-FLAME PROBE). The L.E.D. in the center of the board (red light) indicates power supplied to the Phase 6 OPL microprocessor controller (computer). These L.E.D.'s indicate the inputs and outputs of the Phase 6 OPL microprocessor (computer) as it monitors the safety circuits.



MAN3449

1. **"FAN" (BLOWER) Output L.E.D. Indicator**

   a. If the dryer is started and the blower motor is not operating, yet the Phase 6 OPL microprocessor controller (computer) display fan indicator dot and power supply input L.E.D. are on, but the fan output L.E.D. is off, then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

      1) If the motor is not operating. The fan indicator dot and output L.E.D. are also on, then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

2. **"FOR" (FORWARD) Output L.E.D. Indicator (for optional reversing model ONLY)**

   a. If the dryer is started and the blower motor is operating, but the drive (tumbler/basket) motor is not, yet the Phase 6 OPL microprocessor controller (computer) display "FORWARD" indicator dot is on, the "FOR" (FORWARD) motor output L.E.D. is off; then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

      1) If the drive tumbler (basket) motor is not operating and the forward indicator dot and output L.E.D. is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

3. **"REV" (REVERSE) Output L.E.D. Indicator (for optional reversing models ONLY)**

   a. If the dryer is started and the blower motor is operating but the drive tumbler (basket) motor is not, yet the Phase 6 OPL microprocessor controller (computer) displays "REVERSE" indicator dot is on but the "REV" (REVERSE) motor output L.E.D. is off; then the fault is of the Phase 6 OPL microprocessor controller (computer) itself.

      1) If the drive tumbler (basket) motor is not operating and reverse indicator dot and output L.E.D. is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

4. **"AIR" (AIR JET) Output L.E.D. Indicator - *OPTIONAL***

   a. "AIR" is on with the display dot at the end of the dry cycle once the display reads "dONE," it is on for approximately 60-seconds and the output L.E.D. indicator and the display dot go out. If the air jet does not energize it is not the fault of the Phase 6 OPL microprocessor controller (computer). If the output L.E.D. or dot **DO NOT** go on it is the fault of the Phase 6 OPL microprocessor controller (computer).

5. **"HT1" (HEAT) Output L.E.D. Indicator**

   a. If the dryer is started and there is "No Heat" yet the Phase 6 OPL microprocessor controller (computer) display heat circuit indicator dot is on, but the "HT1" output L.E.D. indicator is off; then the fault is in the Phase 6 OPL microprocessor controller (computer) itself.

      1) If the dryer is started and there is "No Heat" yet both the Phase 6 OPL microprocessor controller (computer) display indicator dots and the "HT1" output L.E.D. indicator are on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

6. **"FUSE" (MAIN FUSE) Input L.E.D. Indicator**

   a. **Should be** on **ALL** the time (even if the dryer is not running). If the L.E.D. is not on; then the display will read "CHECK MAIN FUSE." If the main fuse is good then the fault is on the Phase 6 microprocessor controller (computer).

7. **"LINT" (LINT DOOR) Input L.E.D. Indicator**

   a. **Should be** on **ALL** the time (unless the lint door is opened then the "LINT" L.E.D. indicator will go out).

   b. If the dryer is active (running) and the lint door is opened the "LINT" L.E.D. indicator will go out and the display will read "LINT dOOR." The dryer will stop until the Lint Drawer has been closed, at which time the L.E.D. display will read "PRESS START." At this time, to resume the drying cycle press "ENTER/START" key.

8. **"MAIN" (MAIN DOOR) Input L.E.D. Indicator**

   a. **Should be** on **ALL** the time (unless the lint door is open or the main door is opened then the "MAIN" L.E.D. indicator will go out).

   b. If the dryer is active (running) and the main door is opened the "MAIN" L.E.D. indicator will go out and the display will read "MAIN dOOR." The dryer will stop until the main door has been closed, at which time the L.E.D. display will read "PRESS START." At this time, to resume the drying cycle press "ENTER/START" key.

9. **"DRUM" (TUMBLER [BASKET] HI-LIMIT) Input L.E.D. Indicator**

   a. **Should be** on at **ALL** times (unless the tumbler [basket] hi-limit switch opens prior during the cycle while the heat was on the display would read "dRUM Safety FAIL"). The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying "dRUM SAFETY FAIL" with an audio indication.

10. **"SAIL" (SAIL SWITCH) Input L.E.D. Indicator**

    a. This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is in the closed position prior to start, the "SAIL" output L.E.D. indicator will be off, the machine will not start and the display will read "SAIL SWITCH FAIL" along with an audio indication.

    b. If the sail switch opens during the cycle the "SAIL" output L.E.D. will go out and the display will read "NO AIRFLOW." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying "NO AIRFLOW" along with an audio indication.

11. **"BURN" (BURN HI-LIMIT) Input L.E.D. Indicator**

    a. This routine monitors the temperature of the burner. If the burner hi-limit opens during the cycle while the heat was on the "BURN" output L.E.D. indicator goes out and the display reads "bURNER SAFETY FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C) then the machine will shut down still displaying "bURNER SAFETY FAIL" with an audio indication.

12. "FLAME" (bURNER CONTROL FAIL) Input L.E.D. Indicator

a. This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the microprocessor determines the ignition control has failed. If this occurs when the cycle is active the "FLAME" output L.E.D. indicator will go out and the display will read "bURNER CONTROL FAIL." The machine will run with no heat for three (3) minutes or until the temp drops below 100° F (38° C). Then the machine will shut down still displaying "bURNER CONTROL FAIL" with an audio indication.

13. "POWER SUPPLY" Input L.E.D. Indicator

a. **Should be** on at ALL times (even if the dryer is not running). The power supply L.E.D. (light emitting diode) output indicator will not be on if the power supply fuse to the Phase 6 OPL microprocessor is not present. If the power supply fuse is faulty the L.E.D. output will be off and there will be no display or keyboard (touchpad) function. The "FUSE," "LINT," and "DRUM" output L.E.D. indicators will remain on.

D. L.E.D. CODES

1. Display Codes

A	SLOPE FACTOR
ALL REV	ALWAYS REVERSING
ANTI WRINKL dELAY TIME	ANTI-WRINKLE DELAY TIME
ANTI WRINKL GUARd ACTIVE	ANTI-WRINKLE PROGRAM ACTIVE
ANTI WRINKL GUARd ON TIME	ANTI-WRINKLE GUARD ON TIME
AUTO CYCLE	AUTOMATIC MODE
b	HEAT LOSS (OFF SET) FACTOR
bURNER CONTROL FAIL	GAS ONLY POWER (24 VAC) IS NOT EVIDENT AT GAS VALVE
bURNER FLAME FAIL	NO BURNER FLAME SENSED
bURNER SAFETY FAIL	GAS/ELECTRIC ONLY BURNER/OVEN OPEN HI-LIMIT CIRCUIT
bUZZ	BUZZER (TONE)
bUZZ TIME	BUZ TIME
CEL	DEGREE IN CELSIUS
CHECK MAIN FUSE	MAIN FUSE FAILURE
CLEAN LINT	PROMPT TO CLEAN LINT SCREEN, DRYER CYCLE LOCKOUT
COOL	COOL DOWN CYCLE IN PROGRESS
COOL TIME_M	COOL DOWN TIME
COOL TEMP_	COOL DOWN TEMPERATURE
CYCLEA	PREPROGRAMMED CYCLE A
CYCLEb	PREPROGRAMMED CYCLE B
CYCLEC	PREPROGRAMMED CYCLE C
CYCLED	PREPROGRAMMED CYCLE D
CYCLEE	PREPROGRAMMED CYCLE E
CYCLEF	PREPROGRAMMED CYCLE F
dONE	DRYING or COOLING CYCLE COMPLETE or DRYER IN ANTI-WRINKLE MODE
dRYING	DRYING CYCLE IN PROGRESS
dRY LEVEL_	DRYNESS LEVEL (PERCENTAGE OF EXTRACTION) (NUMERICAL VALUE)
dRY TEMP F_	DRYING TEMPERATURE
dRY TIME_M	LENGTH OF DRYING CYCLE
dRUM SAFETY FAIL	TUMBLER HI-LIMIT CIRCUIT IS OPEN
ELAPSE TIME_MIN	CYCLE DISPLAY TIME
ELECTRIC	SPECIFIC HEAT TYPE or DRYER ELECTRICALLY HEATED
F	FABRIC TEMPERATURE
FAR	DEGREE IN FAHRENHEIT
FLASH	FLASH DISPLAY ACTIVE
GAS	SPECIFIC HEAT TYPE OF DRYER GAS HEATED
HOT	INDICATES AN OVERHEAT CONDITION
LINT dOOR	LINT DRAWER/DOOR CIRCUIT IS OPEN OR FAULT IN THE A.C. SWITCH CIRCUIT
LINT COUNT	DRYING CYCLES RANGE FROM 1-10 CYCLES BEFORE CLEAN LINT DISPLAY
_M REMAIN	CYCLE DISPLAY TIME
MAIN dOOR	DOOR CIRCUIT IS OPEN or FAULT IN THE A.C. DOOR SWITCH CIRCUIT
MANUAL CYCLE	MANUAL MODE
MAX ANTI WRINKL GUARd	MAXIMUM GUARD TIME
NFLASH	FLASH DISPLAY NOT ACTIVE
NoAIRFLOW	SAIL SWITCH OPEN
NoANTI WRINKL GUARd	ANTI-WRINKLE PROGRAM IS NOT ACTIVE
NoBUZZ	NO BUZZER (TONE)
NoHEAT	GAS ONLY IGNITION ATTEMPT FAILURE
NoREV	NO REVERSE
No ROTATE SENSOR	NO ROTATIONAL SENSOR SELECTED
PROGRAM	PROGRAM MODE
REAdY	NO CYCLE IN PROGRESS
ROTATE SENSOR ACTIVE	ROTATIONAL SENSOR SELECTED
ROTATE SENSOR FAIL	ROTATIONAL SENSOR CIRCUIT FAILURE
_RPM	MONITORS TUMBLER RPM WITH ROTATIONAL SENSOR CIRCUIT ACTIVE
SAIL SWITCH FAIL	GAS/ELECTRIC ONLY ATTEMPT MADE TO START DRYER WITH SAIL SWITCH DISABLED IN CLOSED POSITION
SELREV	SELECT REVERSE
SPIN TIME	SPIN TIME
START GUARd	START ANTI-WRINKLE GUARD CYCLE
STEAM	SPECIFIC HEAT TYPE or DRYER STEAM HEATED
STOP TIME	STOP TIME
TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE	FAULT IN M.P. HEAT SENSING CIRCUIT

2. Fault Codes

bURNER CONTROL FAIL
- GAS MODELS ONLY POWER (24 VAC) IS NOT EVIDENT AT GAS VALVE

bURNER FLAME FAIL
- The Phase 6 Microprocessor Controller (Computer) DOES NOT SENSE FLAME VERIFICATION (GAS MODEL ONLY)

bURNER SAFETY FAIL
- GAS/ELECTRIC ONLY BURNER/OVEN OPEN HI-LIMIT CIRCUIT

dRUM SAFETY FAIL
- Fault in the TUMBLER HI-LIMIT CIRCUIT

HOT
- Indicates an OVERHEAT CONDITION

LINT dOOR
- When the LINT DOOR OR DRAWER is open or there is a **fault** in the LINT DOOR/DRAWER CIRCUIT

MAIN dOOR
- When the MAIN DOOR is open or there is a **fault** in the DOOR CIRCUIT

No AIRFLOW
- **Fault** in the SAIL SWITCH CIRCUIT (GAS/ELECTRIC MODELS ONLY)

No HEAT
- GAS ONLY IGNITION ATTEMPT FAILURE

ROTATE SENSOR FAIL
- **Fault** in the ROTATION SENSOR CIRCUIT

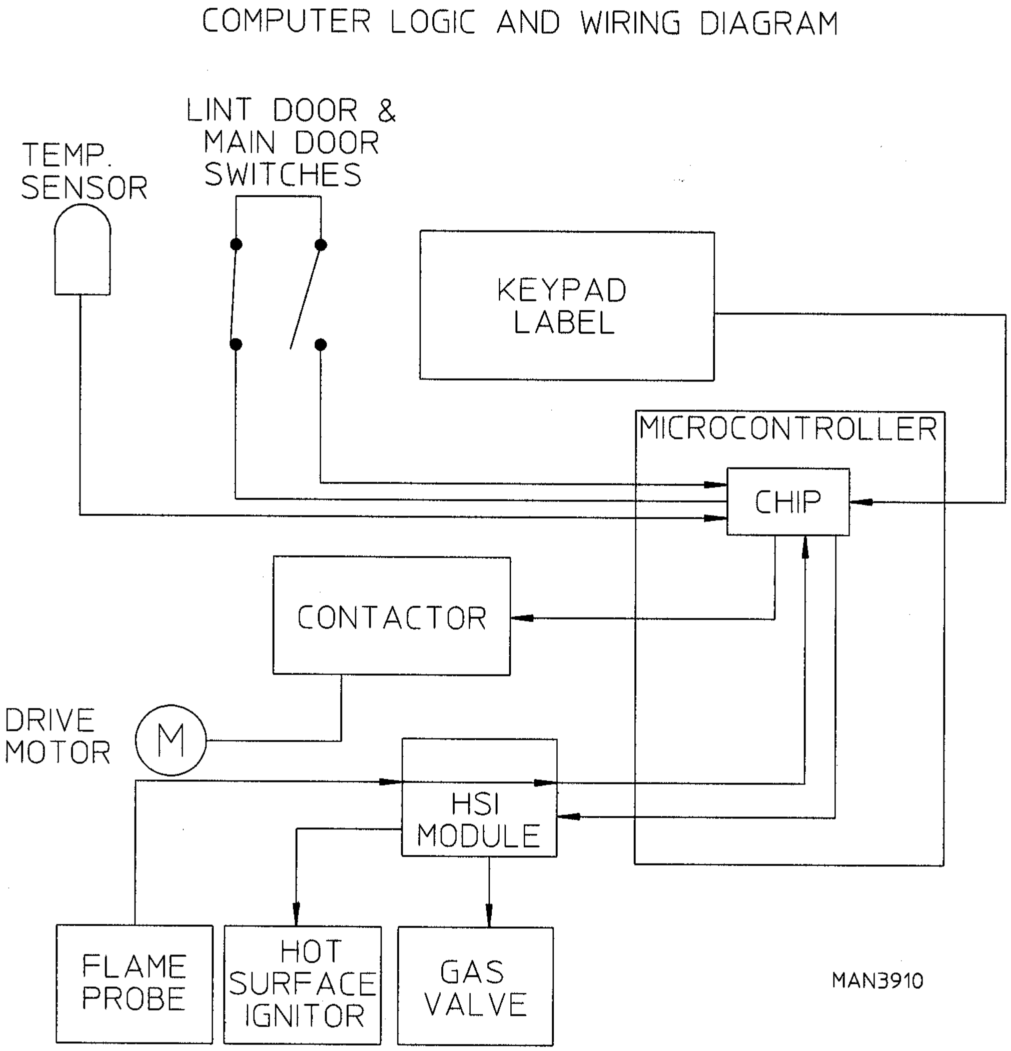
SAIL SWITCH FAIL
- **Fault** in the SAIL SWITCH CIRCUIT (GAS/ELECTRIC MODELS ONLY)

TEMP SENSOR CHECK TEMP SENSOR FUSE
- **Fault** in the MICROPROCESSOR TEMPERATURE SENSOR CIRCUIT

E. COMPUTER LOGIC and WIRING DIAGRAM

1. Operator enters desired selections.

2. Information entered is sent to the microprocessor (computer) via the keyboard (touchpad).

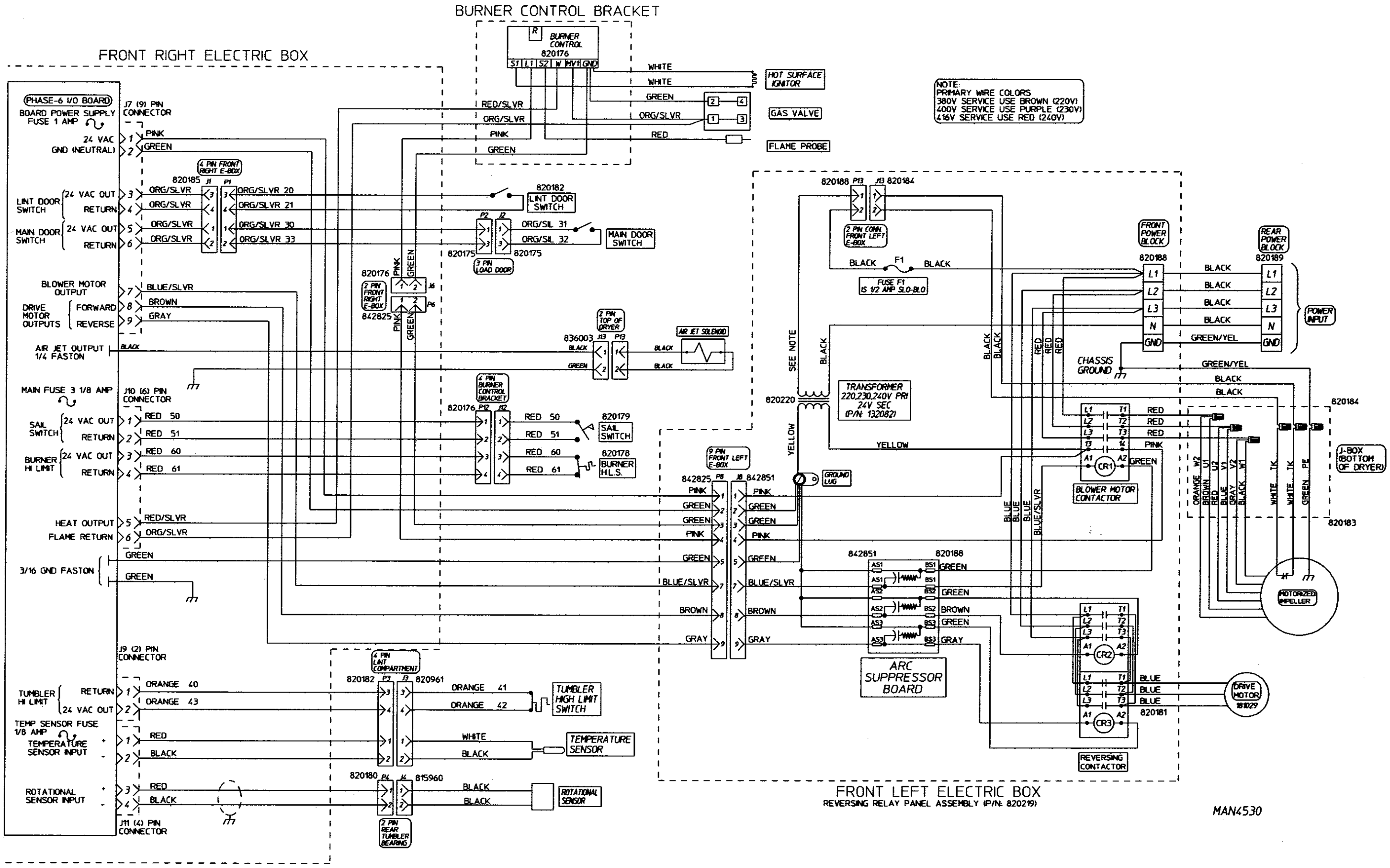

COMPUTER LOGIC AND WIRING DIAGRAM
LINT DOOR & MAIN DOOR SWITCHES
TEMP. SENSOR
KEYPAD LABEL
MICROCONTROLLER
CHIP
CONTACTOR
DRIVE MOTOR
M
HSI MODULE
FLAME PROBE
HOT SURFACE IGNITOR
GAS VALVE
MAN3910

3. The input information is sorted, processed and executed by the microcomputer chip.

4. The microcomputer output signal activates the contactors and HSI (Hot Surface Ignition) module which control machine functions.

NOTE: When contacting **ADC** with electrical questions, please have on hand the correct wiring diagram number for your particular machine. This number is located on the top right-hand corner of the diagram. It is a six (6) digit number followed by a letter to distinguish the revision dates (refer to illustration).

The wiring diagrams used in troubleshooting are specifically for dryers manufactured at the time of publishing. Your particular model may vary slightly depending on the date of manufacturing and options available. The correct wiring diagram and number is either taped to the rear of the control door or each dryer, or placed in the control box. If your particular diagram is lost or unreadable, call **ADC** with the serial number of the dryer. **ADC** will be more than happy to send you a diagram by fax or mail.


BURNER CONTROL BRACKET
FRONT RIGHT ELECTRIC BOX
BURNER CONTROL 820176
S1 L1 S2 W HV1 GND
WHITE
HOT SURFACE IGNITOR
GREEN
ORG/SLVR
GAS VALVE
RED
FLAME PROBE
NOTE:
PRIMARY WIRE COLORS
380V SERVICE USE BROWN (220V)
400V SERVICE USE PURPLE (230V)
416V SERVICE USE RED (240V)
PHASE-6 I/O BOARD
BOARD POWER SUPPLY FUSE 1 AMP
J7 (9) PIN CONNECTOR
24 VAC
GND (NEUTRAL)
PINK
RED/SLVR
4 PIN FRONT RIGHT E-BOX
820185 J1 P1
LINT DOOR SWITCH
24 VAC OUT
RETURN
MAIN DOOR SWITCH
ORG/SLVR 20
ORG/SLVR 21
ORG/SLVR 30
ORG/SLVR 33
820182
P2 J2
ORG/SIL 31
ORG/SIL 32
820175
3 PIN LOAD DOOR
BLOWER MOTOR OUTPUT
DRIVE MOTOR OUTPUTS
FORWARD
REVERSE
BLUE/SLVR
BROWN
GRAY
2 PIN FRONT RIGHT E-BOX
842825
J6 P6
AIR JET OUTPUT 1/4 FASTON
BLACK
2 PIN TOP OF DRYER
836003 J13 P13
AIR JET SOLENOID
MAIN FUSE 3 1/8 AMP
J10 (6) PIN CONNECTOR
4 PIN BURNER CONTROL BRACKET
820176 P12 J12
SAIL SWITCH
BURNER HI LIMIT
RED 50
RED 51
RED 60
RED 61
820179
820178
BURNER H.L.S.
HEAT OUTPUT
FLAME RETURN
3/16 GND FASTON
J9 (2) PIN CONNECTOR
TUMBLER HI LIMIT
ORANGE 40
ORANGE 43
4 PIN LINT COMPARTMENT
820182 P3 J3 820961
ORANGE 41
ORANGE 42
TUMBLER HIGH LIMIT SWITCH
TEMP SENSOR FUSE 1/8 AMP
TEMPERATURE SENSOR INPUT
WHITE
TEMPERATURE SENSOR
ROTATIONAL SENSOR INPUT
820180 P4 J4 815960
ROTATIONAL SENSOR
2 PIN REAR TUMBLER BEARING
J11 (4) PIN CONNECTOR
820188 P13 J13 820184
2 PIN CONN FRONT LEFT E-BOX
F1
FUSE F1 15 1/2 AMP SLO-BLO
FRONT POWER BLOCK
820188
L1 L2 L3 N GND
REAR POWER BLOCK
820189
POWER INPUT
GREEN/YEL
CHASSIS GROUND
SEE NOTE
TRANSFORMER 220,230,240V PRI 24V SEC (P/N 132082)
820220
YELLOW
T1 T2 T3 T4
A1 A2
CR1
BLOWER MOTOR CONTACTOR
820184
J-BOX (BOTTOM OF DRYER)
ORANGE W2
BROWN U1
RED U2
BLUE V1
GRAY V2
BLACK W1
WHITE 1K
WHITE 1K
GREEN PE
820183
9 PIN FRONT LEFT E-BOX
842825 P8 J8 842851
GROUND LUG
842851
820188
AS1 AS2 AS3
BS1 BS2 BS3
ARC SUPPRESSOR BOARD
CR2
CR3
MOTORIZED IMPELLER
DRIVE MOTOR 181029
820181
REVERSING CONTACTOR
FRONT LEFT ELECTRIC BOX
REVERSING RELAY PANEL ASSEMBLY (P/N 820219)
MAN4530

1. No Display Condition

a. Check position of "EMERGENCY STOP" (E-Stop) to verify it is in operating position (pull or twist for operating position).

b. Check fuse one (1) or two (2) and if either are blown, replace.

c. Take voltage reading across the microprocessor (J7) 9-pin connector pins 1 and 2. If no voltage is present at pins 1 and 2, double check the secondary (24 VAC) side of transformer at the blower motor contactor number 13 to ground if no voltage is present check primary voltage to transformer.

d. Check voltage across fuses 1 and 2 to ground. If voltage is present, check "EMERGENCY STOP" (E-Stop) "red" and "black" wire to ground. If voltage is present, check voltage across 95 and 96 to ground of the drive motor overload. If voltage is present, check 95 and 96 to ground of the blower motor overload. If voltage is present and transformer terminations are good, then the transformer is faulty. Refer to the schematic supplied with the dryer to assist in the troubleshooting of the dryer.

NOTE: In this next section ALL voltage checks ***must be*** done in the operating mode with the appropriate microprocessor dot on. Also appropriate L.E.D. output light on.

NOTE: In this next section when checking for voltage you are looking for 25 AC volts unless otherwise specified.

2. Drive motor reverses but does not forward, blower motor runs

a. If computer dot (first dot on the left) does not come on replace the computer.

b. Check for voltage across the coil of the forward contactor located in the reversing panel box. The contactor according to your diagram is marked CR2. The coil markings A1 and A2.

If voltage is present, replace reversing contactor.

If voltage is not present, there is a faulty wire or termination between BS2 and contactor coil (CR2).

c. If there is voltage across the two (2) AS2 terminals and no voltage across the two (2) BS2 terminals, replace the arc suppressor (A.S.) board.

If there is no voltage across the two (2) AS2 terminals on the arc suppressor (A.S.) board, the problem is a faulty wire or termination between the AS2 board and the J7 9-pin computer connector no. 8 or faulty computer.

3. Drive motor works in forward mode but does not reverse, blower motor runs

a. If computer dot (second one from left) does not come on, check program to see if set for reverse.

b. If set for reverse, replace computer.

c. Check for voltage across the coil of the reversing contactor located in the rear panel box. The contactor according to your diagram is CR3, also the markings on the coil are A1 and A2.

If there is voltage, replace the coil or the complete contactor.

If there is no voltage, check for voltage across the two (2) BS3 terminals on the arc suppressor (A.S.) board.

If there is voltage across the two (2) BS3 terminals and no voltage across the coil of the reversing contactor (A1 and A2), the problem is faulty wires or terminations between BS1 and the contactor coil.

d. If there is no voltage between the two (2) BS3 terminals on the arc suppressor (A.S.) board, check for voltage across the two (2) AS3 terminals on the board.

   If there is voltage across the two (2) AS3 terminals and no voltage across the two (2) BS3 terminals, replace the arc suppressor (A.S.) board.

   If there is no voltage across the two (2) AS3 terminals, the problem is faulty wires or terminations between the arc suppressor (A.S.) board and the computer 9-pin connector no. 9 or a faulty computer.

4. Blower motor does not operate, drive motor runs

a. Check for voltage across terminals A1 and A2 of the impellor contactor. This is the single contactor in the reversing control box.

   If voltage is present check for voltage across the blower motor. If there is voltage at the blower motor replace the motor.

   If there is no voltage at the blower motor, the problem is faulty wires or terminations between the contactor and the motor.

b. If there is no voltage present at A1 and A2 of the contactor, check for voltage across the two BS1 terminals of the arc suppressor (A.S.) board.

   If there is voltage present at the two (2) BS1 terminals, the problem is faulty wires or terminations between the two (2) BS1 terminals and the coil (A1 and A2) terminals.

   If there is no voltage across the two (2) BS1 terminals, check for voltage across the two (2) AS1 terminals.

   If there is voltage across the two (2) AS1 terminals and there is no voltage between the two (2) BS1 terminals, replace the arc suppressor (A.S.) board.

c. If there is no voltage across the two (2) AS1 terminals, the problem is faulty wires or terminations between the two (2) AS1 terminals and the computer board J7 9-pin connector no. 7 or faulty computer.

5. Lint Door Condition

NOTE: Make sure main door and lint door are closed. Also, if checking either switch, the plunger ***must be*** depressed.

a. Check L.E.D. (light emitting diode) input light "LINT" on the component side of the computer. If the light is on, replace the computer.

b. Check voltage (24 VAC) from J7 9-pin connector no. 3 to ground. If voltage is present check no. 4 to ground if voltage is present replace board.

c. If no voltage is present at J7 9-pin connector no. 4 to ground, but voltage is present at no. 3 to ground. The problem is a faulty switch, wires or termination between J7 to J8 and J8 to the lint switch no. 20 and 21.

d. If no voltage is present at J7 9-pin connector no. 3 to ground, then voltage **should not be** present at no. 5 to ground. Replace the board.

6. Main Door Condition

NOTE: Make sure main door and lint door are closed. Also, if checking either switch, the plunger ***must be*** depressed.

a. Check L.E.D. (light emitting diode) input light "MAIN" on the component side of the computer. If the light is on, replace the computer.

b. Check voltage (24 VAC) from J7 9-pin connector no. 5 to ground. If voltage is present, check no. 6 to ground. If voltage is present, replace board.

c. If no voltage is present at J7 9-pin connector no. 6 to ground, but voltage is present at no. 5 to ground. The problem is a faulty switch, faulty wires or terminations J7 to J8. J8 to J5 and J5 to main door switch no. 31 and no. 32.

7. "No Heat" drive and blower motors run, display reads normal (gas models).

a. Check L.E.D. (light emitting diode) input light "HT1" on the component side of the computer. If the light is on replace the board.

b. If the L.E.D. (light emitting diode) input light "HT1" on the component side of the computer is on and there is no voltage to the HSI (Hot Surface Ignition) module "w" the display will read "BURNER CONTROL FAIL." The problem is faulty wires or terminations between microprocessor and HSI (Hot Surface Ignition) module.

c. If voltage is present on the HSI (Hot Surface Ignition) module "w" to ground. Check voltage at the gas valve if voltage is present across the two "yellow" wires at the gas valve and the gas supply is on then the fault is that of the gas valve.

8. Microprocessor (Computer)

a. Replace the temperature sensor underneath the tumbler (basket) on a bracket (the bullet shaped device).

b. If it still reads "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE," unplug J3 4-pin connector from the temperature sensor bracket. Also, unplug the microprocessor J14 4-pin connector from the computer board. Take a continuity reading from J14 no. 1 to J3 no. 1, then from J14 no. 2 to J3 no. 2.

If there is no continuity, check for break in wire, a short to the ground, loose terminations, or even replace the wire.

If there is continuity, computer board is faulty.

American Dryer Corp.

IMPORTANT

MANUAL RESET HI-LIMIT INSTRUCTIONS

FOR PHASE 6 MODELS

This dryer was manufactured with a manual reset burner hi-limit and tumbler/lint chamber hi-limit thermostat which is monitored by the Phase 6 computer. If either manual reset thermostat is open prior to start of the drying cycle, the dryer will start momentarily and then shut down, the Phase 6 computer will display an error code with an audio indication. If the tumbler/lint chamber hi-limit thermostat is open, the display will read "dRUM SAFETY FAIL." If the burner hi-limit thermostat is open, the display will read "bURNER SAFETY FAIL."

If either manual reset hi-limit thermostat opens during a drying cycle, the display will show the applicable error code described above along with an audio indication. If the drum temperature is above 100° F (38° C), the dryer will continue to run with no heat for three (3) minutes or until the drum temperature has flattened below 100° F (38° C). The clear/stop button on the Phase 6 keyboard (touchpad) **must be** pressed to clear the error condition. The open manual reset hi-limit thermostat **must be** reset "manually" prior to the start of the next cycle.

This hi-temperature condition may be caused due to a restricted exhaust, poor airflow or improper burner operation.

The location of the burner hi-limit is on the right side of the burner box and the tumbler hi-limit is located in the lint chamber area.

WARNING: Discontinue power to dryer before attempting to reset hi-limit.

IMPORTANT

This dryer is equipped with a burner hi-limit and tumbler/lint chamber hi-limit thermostat which **must be** reset manually.

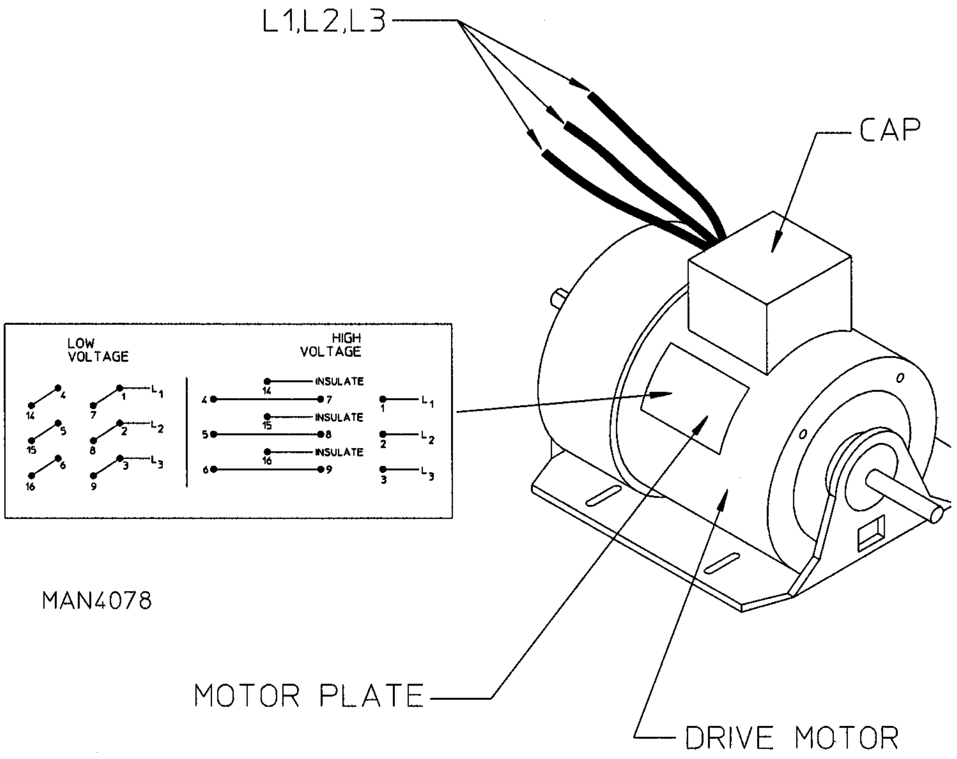
WARNING: Discontinue power to dryer before attempting to reset hi-limit.

SECTION VIII

TECHNICAL INFORMATION

The following section contains various technical information important to the service person in servicing and maintaining the dryer.

A. MOTOR PLATE (HIGH and LOW VOLTAGE)


L1,L2,L3
CAP
LOW VOLTAGE
HIGH VOLTAGE
14 4
7 1 L1
15 5
8 2 L2
16 6
9 3 L3
14 INSULATE
4 7
1 L1
15 INSULATE
5 8
2 L2
16 INSULATE
6 9
3 L3
MAN4078
MOTOR PLATE
DRIVE MOTOR

The motor plate is located on the side of the drive motor (refer to illustration) and contains a graphical representation of the motor wiring for both low and high voltage ratings.

Removing the cap reveals the wiring to the motor. On each wire there is a number which corresponds to the numbers on the motor plate. Depending on whether the dryer is operating on low or high voltage, the wiring should match the motor plate as follows:

The dots and lines represent connections (refer to illustration).

For example:

On low voltage - wire no. 14 is connected to wire no. 4

- wire no. 1 is connected to wire no. 7, which in turn are both connected to L1

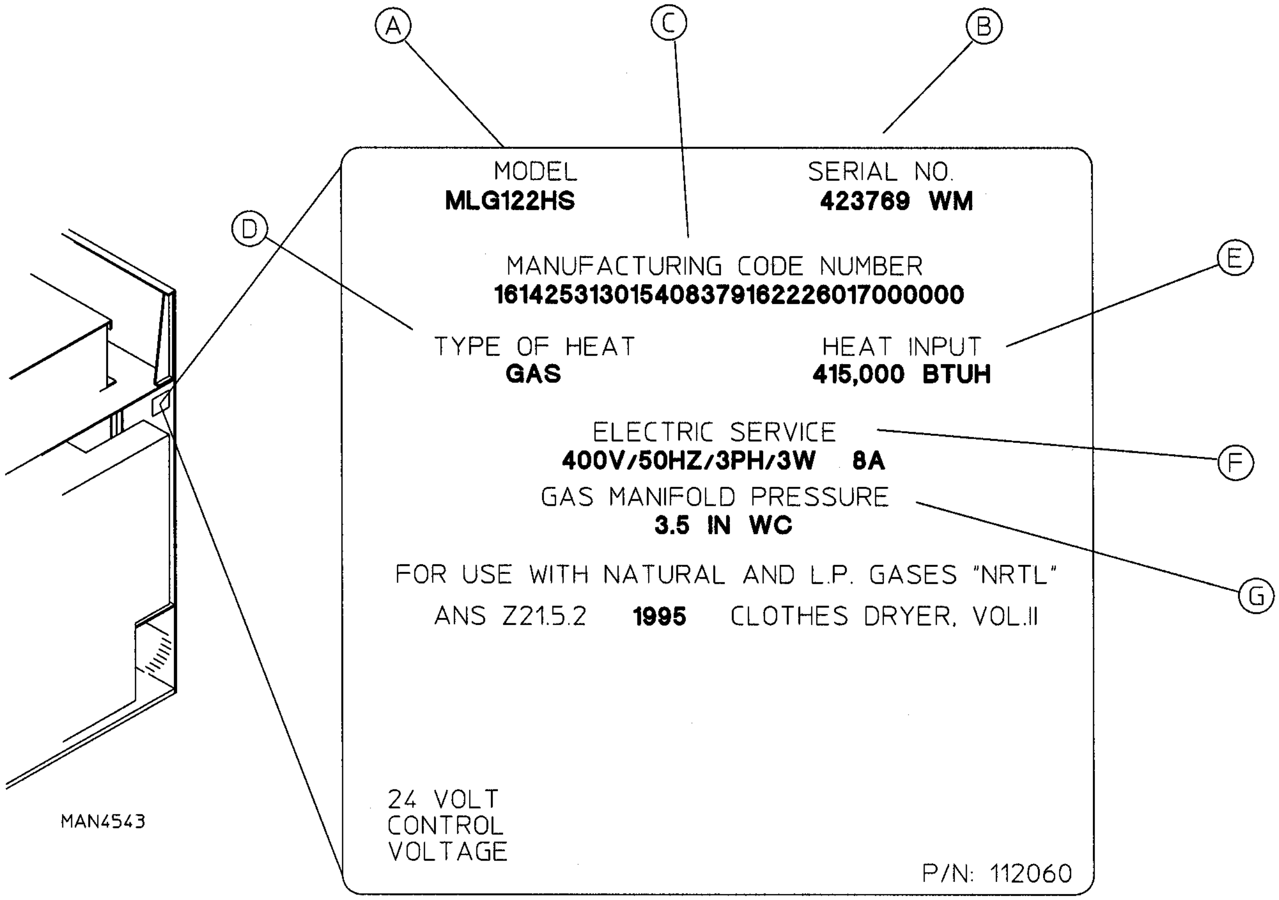
On high voltage - wire no. 14 is insulated or capped

- wire no. 4 is connected to wire no. 7

- wire no. 1 is connected to L1

B. DATA LABEL

Contacting **American Dryer Corporation (ADC)**



MODEL
MLG122HS

SERIAL NO.
423769 WM

MANUFACTURING CODE NUMBER
16142531301540837916222601700000

TYPE OF HEAT
GAS

HEAT INPUT
415,000 BTUH

ELECTRIC SERVICE
400V/50HZ/3PH/3W 8A

GAS MANIFOLD PRESSURE
3.5 IN WC

FOR USE WITH NATURAL AND L.P. GASES "NRTL"
ANS Z21.5.2 1995 CLOTHES DRYER, VOL.II

24 VOLT
CONTROL
VOLTAGE

P/N: 112060

When contacting **ADC**, certain information is required to ensure proper service and parts information. This information is on the data label, located on the top right corner of the dryer, viewed from the rear (refer to illustration). When contacting **ADC**, please have the model number and serial number readily accessible.

Information on the Data Label

a. Model number - The model number is an **ADC** number which describes the size of the dryer and the type of heat (gas or steam).

b. Serial number - The serial number allows **ADC** to gather information on your particular dryer.

c. Manufacturing code number - The manufacturing code number is a number issued by **ADC** which describes **ALL** possible options on your particular model.

d. Type of heat - Describes the type of heat; gas (natural or L.P. [liquid propane]), steam or electric.

e. Heat input - (For gas dryers) describes the heat input in British Thermal Units.

f. Electric service - Describes the electric service for your particular models.

g. Gas manifold pressure - Describe the manifold pressure as taken at the gas valve pressure tap (refer to "Using a Manometer").

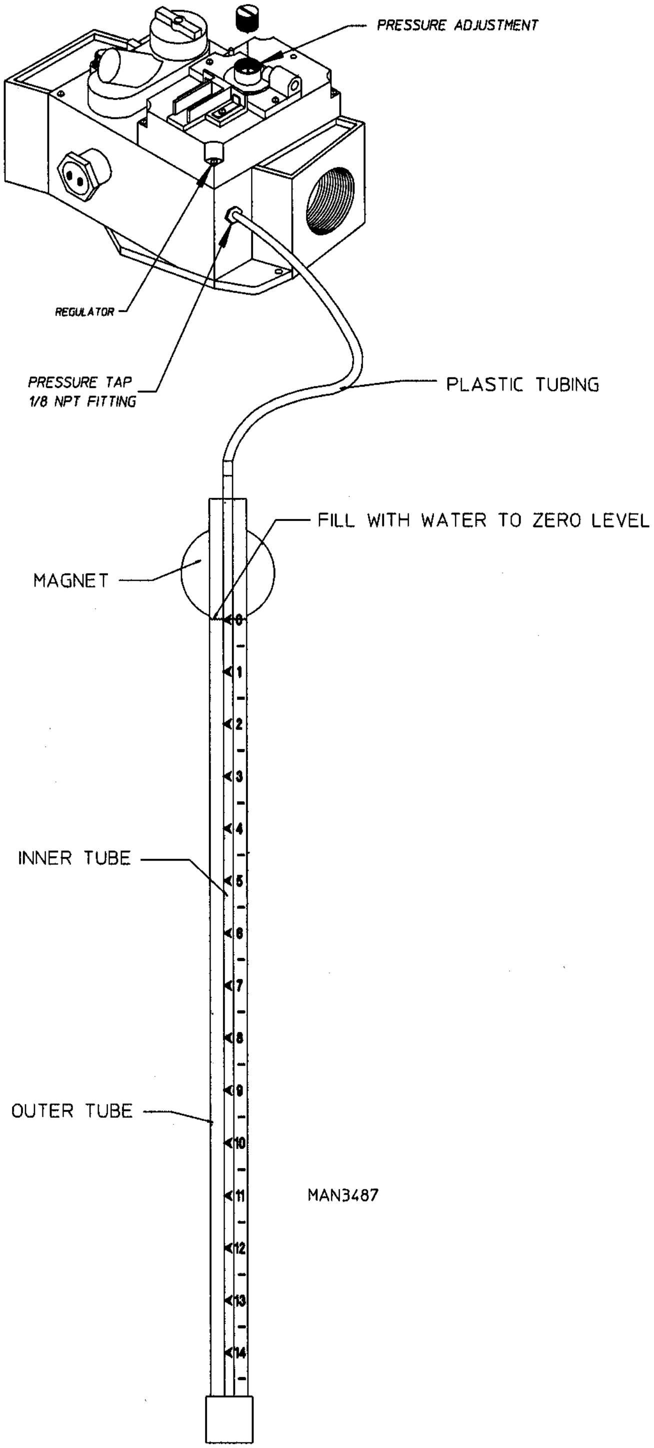
C. HOW TO USE A MANOMETER

1. With dryer in nonoperating mode, remove plug on the gas valve pressure tap.
2. Attach plastic tubing to pressure tap. Fitting is supplied with manometer (refer to illustration).
3. Attach manometer to dryer using magnet.

NOTE: Place manometer in a position so that readings can be taken at eye level.

4. Fill manometer with water, as shown in illustration to the zero level.
5. Start dryer. With burner on, take a reading.
   a. Read water level at the inner tube. Readings **should be** taken at eye level.
   b. Correct readings **should be**:

      NATURAL GAS: 3.5 inches W.C. - 8.7 mb.
      L.P. GAS: 10.5 inches W.C. - 26.1 mb.
6. If water column pressure is incorrect refer to "TO ADJUST GAS PRESSURE."
7. Reverse procedure for removing manometer.


PRESSURE ADJUSTMENT
REGULATOR
PRESSURE TAP
1/8 NPT FITTING
PLASTIC TUBING
FILL WITH WATER TO ZERO LEVEL
MAGNET
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
INNER TUBE
OUTER TUBE
MAN3487

D. ML-122 TOOL LIST

Straight Head Screwdriver

Phillips Head Screwdriver

Sensor Pin and Socket Tool (P/N 122801)

Pliers

1/4" Nut Driver

3/8" Open End Wrench

5/8" Open End Wrench

3/8" Socket Wrench

1/2" Socket or Open End Wrench

1/4" Open End Wrench

5/16" Socket or Open Wrench

1/2" Socket Wrench

7/16" Socket or Open End Wrench

5/16" Nut Driver

12" Pipe Wrench (2)

1/8" "T" Shaped or "L" Shaped Allen Wrench

3/16" "T" Shaped or "L" Shaped Allen Wrench

Wire Cutters

1/2" Allen Wrench

3/8" Allen Wrench

Channel Locks

Manometer (**ADC** P/N 122804)

MP Pin Extraction Tool (**ADC** P/N 122800)

ML-130 Table of Content

SECTION I

IMPORTANT INFORMATION C3
- A. Safety Precautions C3

SECTION II

ROUTINE MAINTENANCE C5
- A. Cleaning C5
- B. Adjustments C6
- C. Lubrication C6

SECTION III

INSTALLATION REQUIREMENTS C7
- A. Enclosure, Air Supply, and Exhaust Requirements C7
- B. Electrical and Gas Requirements C7
- C. Operational Service Check Procedure C8

SECTION IV

DESCRIPTION OF PARTS C10
- A. Control Box C10
- B. Drive Motor C10
- C. HSI (Hot Surface Ignition) Module (Gas Models Only) C10
- D. Gas Burner Assembly C11
- E. Blower Motor and Impellor C11
- F. Idler Assembly C11
- G Tumbler (Basket) Bearing and Pulley Arrangement C12
- H. Tumbler (Basket) C12
- I. Main Door Switch C12
- J. Sail Switch (Gas and Electric Models Only) C13
- K. Hi-Limit (Gas and Electric Models Only) C13
- L. Manual Reset Thermostat C13
- M. Lint Drawer C14
- N. Lint Drawer Switch C14
- O. Steam Damper System C14

SECTION V
SERVICING C15
A. Computer Controls C15
B. Ignition Controls C17
C. Thermostats C21
D. Sail Switch Assembly (Gas and Electric Models Only) C23
E. Front Panel and Main Door Assemblies C23
F. Pulleys C26
G. Tumbler (Basket) Assembly C28
H. Bearings C30
I. V-Belts C32
J. Motors C33
K. Impellor C34
L. Lint Drawer Assembly C34

SECTION VI
TROUBLESHOOTING C35

SECTION VII
PHASE 6 OPL SYSTEM DIAGNOSTICS C39
A. Diagnostic (L.E.D. [light emitting diode] Display) Failure Codes C39
B. L.E.D. (light emitting diode) Display Indicators C41
C. Phase 6 OPL Microprocessor Controller (Computer) Relay Output L.E.D. (light emitting diode) Indicators C42
D. L.E.D. Codes C46
E. Computer Logic and Wiring Diagram C48

SECTION VIII
TECHNICAL INFORMATION C54
A. Motor Plate (High and Low Voltage) C54
B. Data Label C55
C. How to Use a Manometer C56
D. Tool List C57

SECTION I

IMPORTANT INFORMATION

A. SAFETY PRECAUTIONS

WARNING: For your safety, the information in this manual ***must be*** followed to minimize the risk of fire or explosion or to prevent property damage, personal injury, or loss of life.

WARNING: The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. PERSONAL INJURY or FIRE COULD RESULT.

1. **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
2. Purchaser/user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions **should be** posted in a prominent location.
3. WHAT TO DO IF YOU SMELL GAS...
    a. **DO NOT** try to light any appliance.
    b. **DO NOT** touch any electrical switch.
    c. **DO NOT** use any phone in your building.
    d. Clear the room, building, or area of **ALL** occupants.
    e. Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
    f. If you **cannot** reach your gas supplier, call the fire department.
4. Installation and service **must be** performed by a qualified installer, service agency, or gas supplier.
5. Dryer(s) **must be** exhausted to the outdoors.
6. Although **ADC** produces a very versatile machine, there are some articles that, due to fabric composition or cleaning method, **should not be** dried in it.

WARNING: Dry only water-washed fabrics. ***DO NOT*** dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "**ALL** purpose" cleaner.
EXPLOSION COULD RESULT.

WARNING: ***DO NOT*** dry rags or articles coated or contaminated with gasoline, kerosene, oil, paint, wax.
EXPLOSION COULD RESULT.

WARNING: *DO NOT* dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

WARNING: *DO NOT* use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubber materials. Drying in a heated tumbler (basket) may damage plastics or rubber and also may be a fire hazard.

7. A program **should be** established for the inspection and cleaning of lint in the heating unit area, exhaust duct work, and inside the dryer. The frequency of inspection and cleaning can best be determined from experience at each location.

WARNING: The collection of lint in the burner area and exhaust duct work can create a potential fire hazard.

8. For personal safety, the dryer **must be** electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

NOTE: Failure to do so will VOID THE WARRANTY.

9. **UNDER NO CIRCUMSTANCES** should the dryer door switches, lint door switch, heat safety circuit ever be disabled.

WARNING: PERSONAL INJURY or FIRE COULD RESULT.

10. This dryer is not to be used in the presence of dry cleaning solvents or fumes.

11. Remove articles from the dryer as soon as the drying cycle has been completed.

WARNING: Articles left in the dryer after the drying and cooling cycles have been completed can create a fire hazard.

12. **DO NOT** operate steam dryers with more than 125 PSI (8.61 bars) steam pressure. Excessive steam pressure can damage steam coil and/or harm personnel.

13. Replace leaking flexible hoses or other steam fixtures immediately. **DO NOT** operate the dryer with leaking flexible hoses. **PERSONAL INJURY MAY RESULT.**

14. **READ and FOLLOW ALL CAUTION and DIRECTION LABELS ATTACHED TO THE DRYER.**

WARNING: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

SECTION II

ROUTINE MAINTENANCE

A. CLEANING

A program and/or schedule **should be** established for periodic inspection, cleaning, and removal of lint from various areas of the dryer, as well as throughout the duct work system. The frequency of cleaning can best be determined from experience at each location. Maximum operating efficiency is dependent upon proper air circulation. The accumulation of lint can restrict this airflow. If the guidelines in this section are met, an **ADC** dryer will provide many years of efficient, trouble free, and – most importantly – safe operation.

WARNING: LINT FROM MOST FABRICS IS HIGHLY COMBUSTIBLE. THE ACCUMULATION OF LINT CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: KEEP DRYER AREA CLEAR and FREE FROM COMBUSTIBLE MATERIALS, GASOLINE, and THEIR FLAMMABLE VAPORS and LIQUIDS.

NOTE: Suggested time intervals shown are for average usage which is considered six (6) to eight (8) operational (running) hours per day.

Clean lint drawer and screen every third or fourth load.

NOTE: Frequency can best be determined at each location.

DAILY

(beginning) of each work shift.

Clean lint from the lint drawer and screen. Inspect lint screen and replace if torn.

WEEKLY

Clean lint accumulation from lint chamber, thermostat, and microprocessor temperature sensor (sensor bracket) area.

WARNING: To avoid the hazard of electrical shock, discontinue electrical supply to dryer.

STEAM DRYERS

Clean steam coil fins using compressed air and a vacuum cleaner with brush attachment.

NOTE: When cleaning steam coil fins, be careful not to bend the fins. If fins are bent, straighten by using fin comb which is available from local air conditioning supply houses.

90 DAYS

Remove lint from tumbler (basket), drive motors, and surrounding areas. Remove lint from gas valve burner area with a dusting brush or vacuum cleaner attachment.

NOTE: To prevent damage, avoid cleaning, and/or touching ignitor and flame-probe assembly.

Remove lint accumulation from inside control box and at rear area behind control box.

EVERY 6 MONTHS

Inspect and remove lint accumulation in customer furnished exhaust duct work system and from dryer's internal exhaust ducting.

WARNING: THE ACCUMULATION OF LINT IN THE EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: ***DO NOT*** OBSTRUCT THE FLOW OF COMBUSTION and VENTILATION AIR. CHECK CUSTOMER FURNISHED BACK DRAFT DAMPER IN EXHAUST DUCT WORK. INSPECT and REMOVE ANY LINT ACCUMULATION WHICH CAN CAUSE DAMPER TO BIND or STICK.

NOTE: A back draft damper that is sticking partially closed can result in slow drying and shut down of the heat circuit safety switches or thermostats.

NOTE: When cleaning dryer cabinet(s), avoid using harsh abrasives. A product intended for the cleaning of appliances is recommended.

B. ADJUSTMENTS

7 DAYS AFTER INSTALLATION and EVERY 6 MONTHS THEREAFTER

Inspect bolts, nuts, screws, (bearing set screws), nonpermanent gas connections (unions, shut-off valves, orifices, and ground connections). Motor and drive belts **should be** examined. Cracked or seriously frayed belts **should be** replaced. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of **ALL** safety devices (door switch, lint drawer switch, sail switch, burner and hi-limit thermostats).

C. LUBRICATION

The motor bearings, idler bearings, and tumbler (basket) bearings are permanently lubricated. **NO LUBRICATION IS NECESSARY.**

The impellor (fan) shaft bearings should be lubricated every three (3) months.

SECTION III

INSTALLATION REQUIREMENTS

Installation **should be** performed by competent technicians in accordance with local and state codes. In the absence of these codes, the installation **must conform** to applicable American National Standards: National Fuel Gas Code ANSI.Z223.1-LATEST EDITION or National Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION (for General Installation and Gas Plumbing) or Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

A. ENCLOSURE, AIR SUPPLY, and EXHAUST REQUIREMENTS

NOTE: The following information is very brief and general. For a detailed description, refer to the ML-130 Installation Manual (**ADC** Part No. 113002).

Bulkheads and partitions around the dryer **should be** made of noncombustible materials. Allowances **should be** made for the opening and closing of the control door and lint drawer. Also, allowances **should be** made in the rear for ease of maintenance. (Refer to appropriate installation manual for recommended distances and minimum allowances required.)

When the dryer is operating, it draws in room air, heats it, passes this air through the tumbler (basket), and exhausts it out of the building. Therefore, the room air **must be** continually replenished from the outdoors. If the make-up air is inadequate, drying time and drying efficiency will be adversely affected. Ignition problems and sail switch "fluttering" problems on gas dryers may result, and you also could have premature motor failure from overheating. The air supply **must be** given careful consideration to insure proper performance of each dryer.

IMPORTANT: Make-up air ***must be*** provided from a source free of dry cleaning fumes. Make-up air that is contaminated by dry cleaning fumes will result in irreparable damage to motors and other dryer components.

Exhaust duct work **should be** designed and installed by a competent technician. Improperly sized duct work will create excessive back pressure which will result in slow drying, increased use of energy, and shut down of the burner by the airflow (sail) switch, burner hi-limit or lint chamber hi-heat protector thermostat. (Refer to appropriate Installation Manual for more details.)

CAUTION: IMPROPERLY SIZED or INSTALLED EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

B. ELECTRICAL and GAS REQUIREMENTS

It is your responsibility to have **ALL** electrical connections made by a properly licensed and competent electrician to assure that the electrical installation is adequate and conforms with local and state regulations or codes. In the absence of such codes, **ALL** electrical connections, material, and workmanship **must conform** to the applicable requirements of the National Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

IMPORTANT: Failure to comply with these codes or ordinances and/or the requirements stipulated in this manual can result in personal injury or component failure.

The gas dryer installation **must meet** the American National Standard, National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections) as well as, local codes and ordinances, and **must be** done by a qualified technician.

NOTE: Undersized gas piping will result in ignition problems and slow drying and can create a safety hazard.

The dryer **must be** connected to the type of gas (natural or L.P. [liquid propane]) indicated on the dryer data label. If this information ***DOES NOT* agree with the type of gas available, contact the distributor who sold the dryer or contact the factory.**

The gas input ratings shown on the dryer data label are for elevations up to 2,000 feet (610 meters), unless elevation requirements of over 2,000 feet (610 meters) were specified at the time the dryer order was placed with the factory. The adjustment for dryers in the field for elevations over 2,000 feet (610 meters) are made by changing the burner orifices. If this adjustment is necessary, contact the distributor who sold the dryer or contact the factory.

NOTE: Any burner changes ***must be*** made by a qualified technician.

C. OPERATIONAL SERVICE CHECK PROCEDURE

1. Turn on electric power to the dryer.

2. To start dryer:

   a. Display will read "READY."

   b. Press "E" on the keyboard (touchpad) of microprocessor controller (computer).

   c. The dryer will start and the display will show "dr30."

NOTE: Pressing keyboard (touchpad) selections "A," "B," "C," "D," and "F" will also start the dryer. Six (6) preprogrammed drying cycles ("A" through "F") have been stored in the computer's memory. (Refer to the Computer Operator's Manual for details.)

3. Make a complete operational check of **ALL** the operating controls to assure that the timing is correct, temperature selection switches are functioning, etc.

4. Make a complete operational check of **ALL** safety-related circuits - door switch(es), hi-limit thermostat, sail switch, cycling thermostats, etc.

5. For gas dryers a gas pressure test **should be** taken at the gas valve pressure tap of each dryer to assure that the water column pressure is correct and consistent.

, **NOTE:** Water column pressure requirements (measured at the pressure tap on the gas valve body):

Natural Gas - 3.5 inches water column (W.C.) - 8.7 mb.
L.P. Gas - 10.5 inches water column (W.C.) - 26.1 mb.

6. If computer program changes are required, refer to the Phase 6 OPL User's Manual (**ADC** Part No. 113022) for details.

7. The dryer **should be** operated through one complete cycle to assure that no further adjustments are necessary and that **ALL** components are functioning properly.

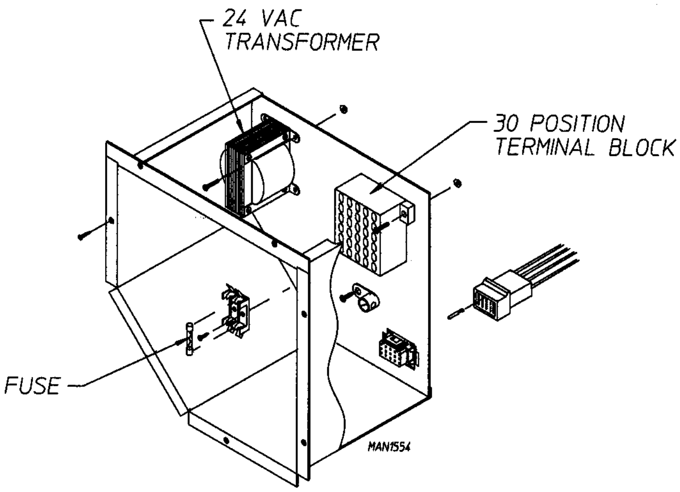
8. Check the electric service phase sequence. While the dryer is operating, check to see if the blower wheel is rotating in the proper direction. Looking from the front, the blower wheel **should spin** in the clockwise (CW) direction. If so, the phasing is correct. If the phasing is incorrect, reverse two (2) leads at connections L1, L2, or L3 of power supply to the dryer.

SECTION IV

DESCRIPTION OF PARTS

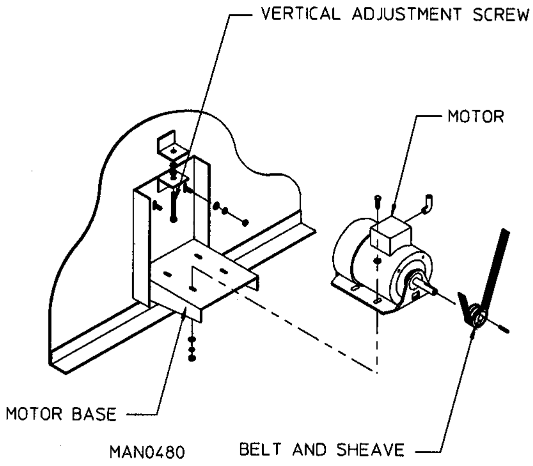
A. CONTROL BOX

Lifting the control door and opening the computer panel will reveal the control box. Inside the control box are **ALL** the electronic control components. Located on the back of the control panel is the computer. Included in the control box are the 30-position block, fuse block, and transformer.


24 VAC TRANSFORMER
30 POSITION TERMINAL BLOCK
FUSE
MAN1554

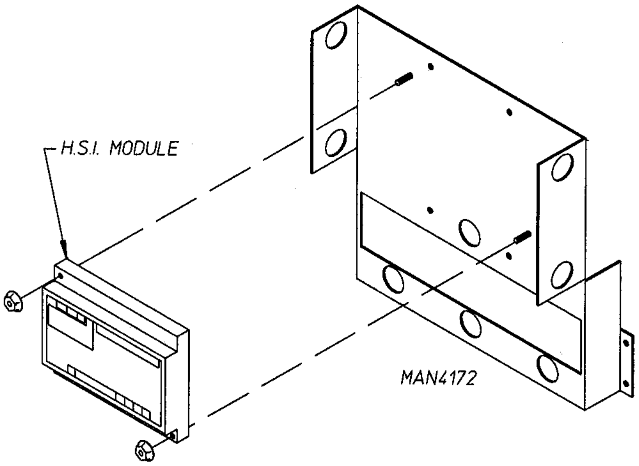
B. DRIVE MOTOR

The T.E.F.C. (Totally Enclosed, Fan-Cooled) drive motor is located approximately lower center of the dryer. It sits on an adjustable base so that the motor can be easily adjusted to the left or right, up or down, forward or backward. The drive motor is a 3/4 HP motor and operates on 208 to 460 volts, 3-phase (3ø), 50/60 Hz.

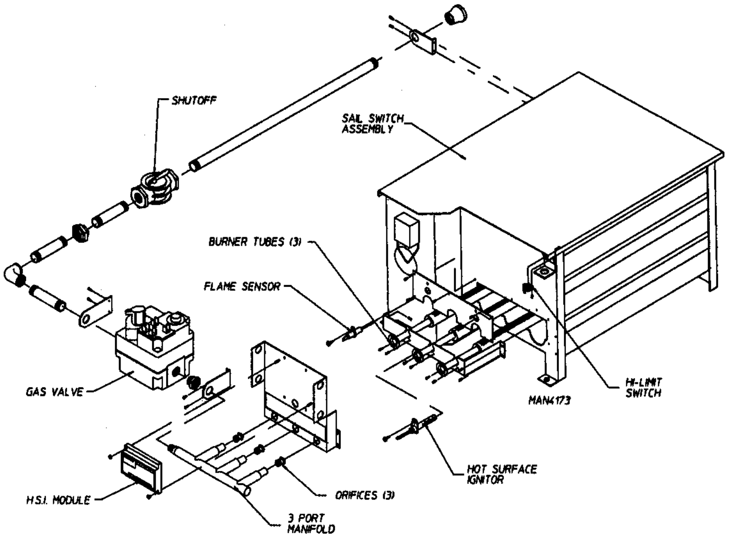

VERTICAL ADJUSTMENT SCREW
MOTOR
MOTOR BASE
MAN0480
BELT AND SHEAVE

C. HSI (HOT SURFACE IGNITION) MODULE (Gas Models Only)

The HSI (Hot Surface Ignition) system consists of a microprocessor (computer) based control module, along with a hot surface ignitor probe, and a flame probe assembly. The hot surface ignitor is a silicon carbide ignitor that upon application of 24 VAC will glow bright orange for the inter-purge time period. Upon ignition, the resistance in the flame sensor electrode changes and the information is sent to the HSI module via the sensor probe lead connection to the module. Once the resistance is changed and sensed, the HSI module will sustain the gas flow (provide 24 VAC power to the gas valve).

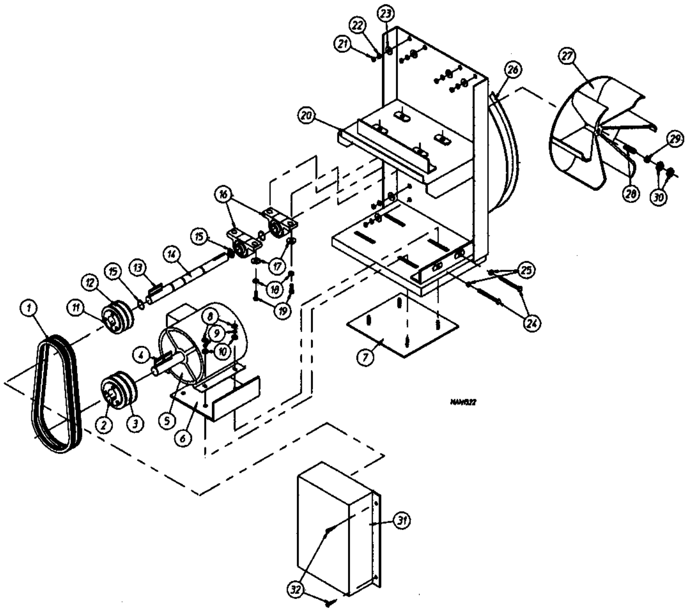

H.S.I. MODULE
MAN4172

D. GAS BURNER ASSEMBLY


SHUTOFF
SAIL SWITCH ASSEMBLY
BURNER TUBES (3)
FLAME SENSOR
GAS VALVE
HI-LIMIT SWITCH
MAN4173
HOT SURFACE IGNITOR
ORIFICES (3)
H.S.I. MODULE
3 PORT MANIFOLD

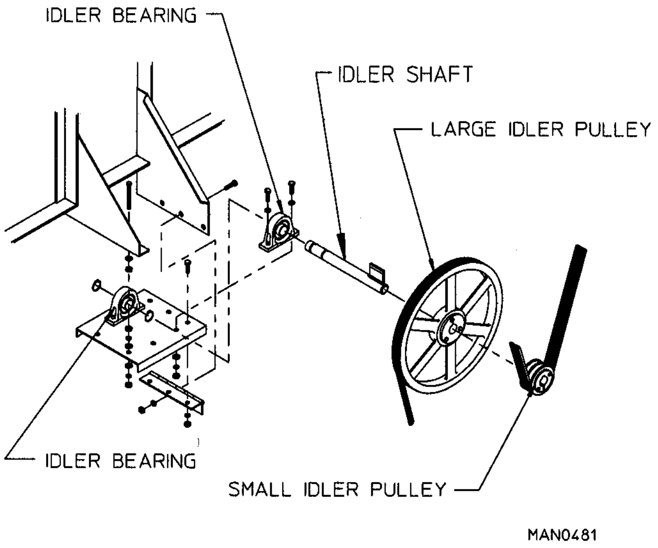
Gas heated dryers are equipped with a gas burner assembly consisting of three (3) burner tubes, gas valve, glo bar, flame sensor, sail switch, and hi-limit thermostat. The inlet piping enters through the rear of the dryer on the left hand side (viewing from the front) and runs to the front of the dryer where the gas valve is located.

E. BLOWER MOTOR and IMPELLOR


23
22
21
26
27
20
29
28
30
16
15
14
13
12
15
11
1
17
18
19
25
24
8
9
10
4
7
2
3
5
6
31
32

The impellor on the ML-130 is shaft driven. The blower motor drives the shaft on which the impellor is mounted. This enables the impellor to run at a higher RPM, thereby producing a higher airflow (cfm).

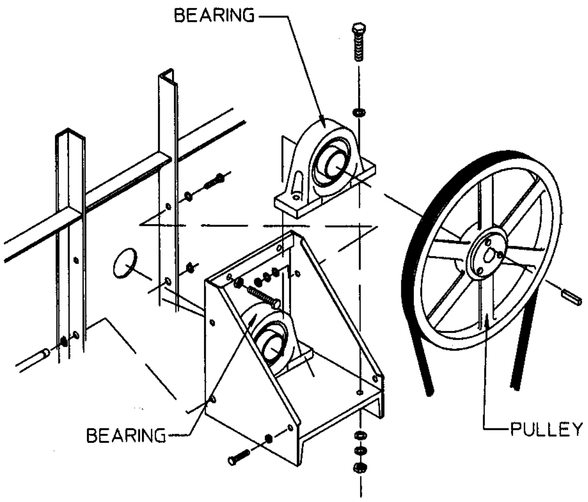
F. IDLER ASSEMBLY


IDLER BEARING
IDLER SHAFT
LARGE IDLER PULLEY
IDLER BEARING
SMALL IDLER PULLEY
MAN0481

(Viewing from the rear of the dryer) the idler assembly is located approximately on the lower center of the dryer. The idler assembly consists of two (2) idler pulleys, (small and large). The idlers' main purpose is to reduce the speed and increase torque provided to the tumbler (basket) bearing. Also, at the idler assembly, belt tension can be adjusted.

G. TUMBLER (BASKET) BEARING and PULLEY ARRANGEMENT

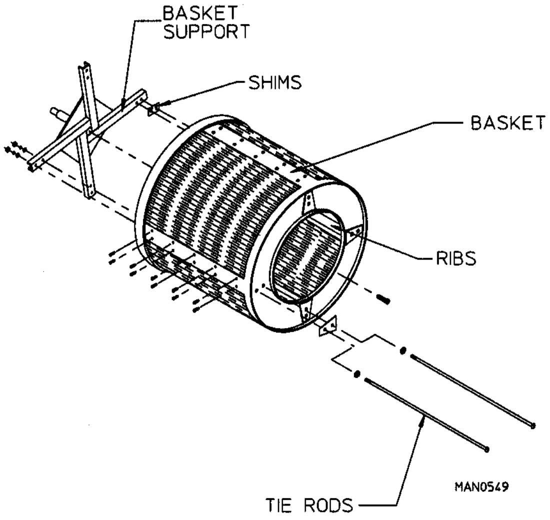
The tumbler (basket) bearing and pulley arrangement is located (viewing from the rear of the dryer) approximately at the upper center of the dryer. The arrangement consists of a pulley and two (2) bearings which serve to drive, adjust, and support the tumbler (basket).



MAN0536

H. TUMBLER (BASKET)

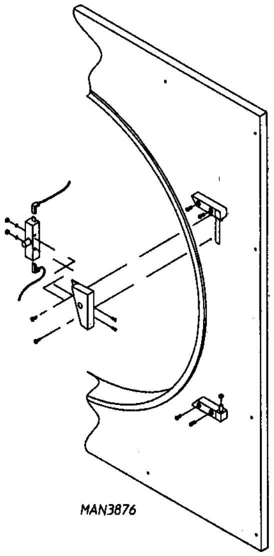
The tumbler (basket) consists of four (4) ribs and four (4) perforated panels, along with a front and back, which are screwed together as an assembly. The tumbler (basket) also consists of tie rods, which support the tumbler (basket) from front to back. The tumbler (basket) support is used to mate the tumbler (basket) to the drive system in the rear.



MAN0549

I. MAIN DOOR SWITCH

The main door switch is mounted to the front panel behind the main door. When the main door opens, the switch will also open, preventing the dryer from operating. **The main door switch is a safety device and should never be disabled.**

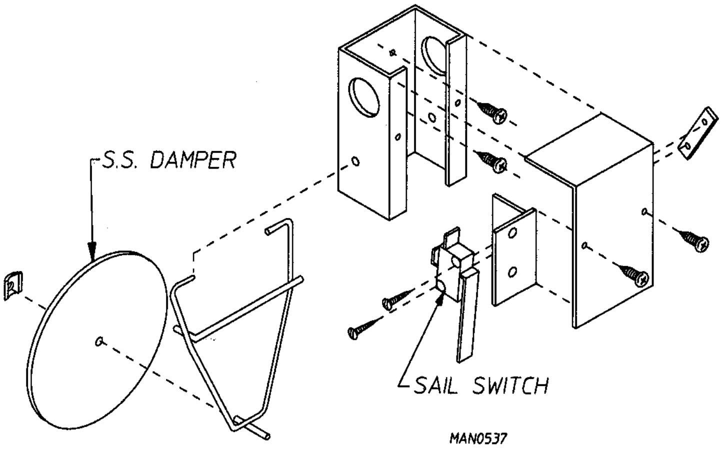


MAN3876

CURRENT PRODUCTION

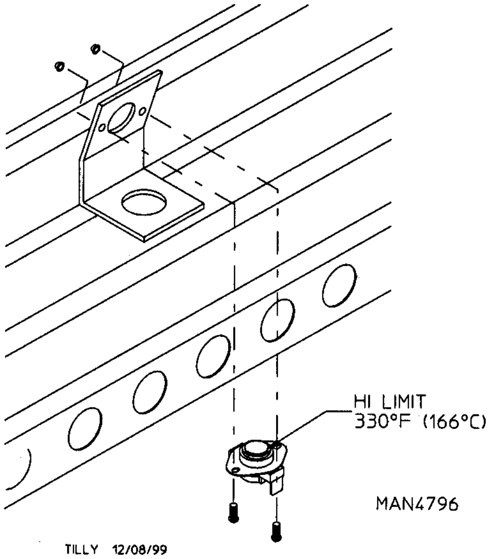
J. SAIL SWITCH (Gas and Electric Models Only)

The sail switch is located on the front of the burner box for gas dryers on the right side of the oven assembly for electric dryers. A sail switch consists of a round damper plate on a lever arm which is in contact with an electric switch. When the air blower comes on, it draws air through the gas or electric burner. This creates a negative pressure inside the burner box, and this negative pressure pulls in the round damper and activates the sail switch. If there is improper airflow, the damper will not pull in, preventing the burner from coming on. Improper airflow can be caused by improperly designed exhaust ducting where the duct run is too long or has too many sharp bends in it. It can also be caused by a lack of make-up air.



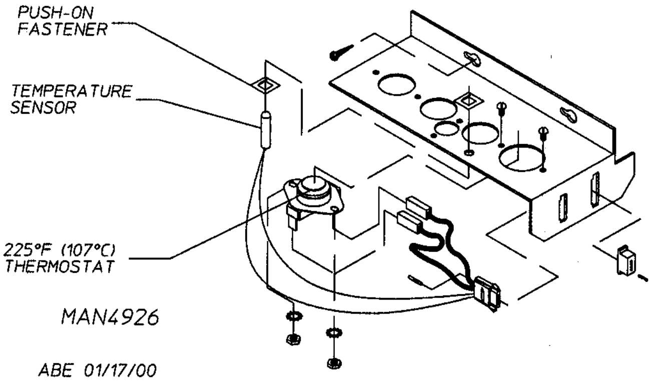
K. HI-LIMIT (Gas and Electric Models Only)

A hi-limit thermostat is located at the burner. This is an manual reset disc-type thermostat set at 330° F (166° C) for gas dryers and at 290° F (143° C) for electric dryers. If the flame in the burner should get too hot, this thermostat will shut off the burner. This is generally caused by low airflow through the dryer.



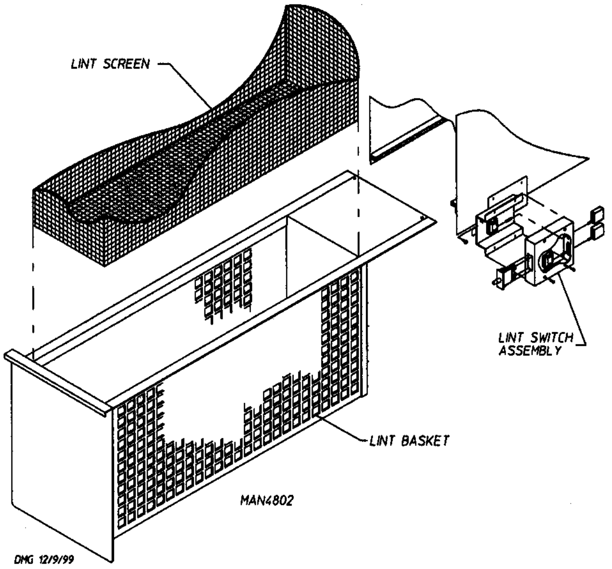
L. MANUAL RESET THERMOSTAT

This is located inside the dryer in the lint compartment above the lint screen. This thermostat senses the heated air after it passes through the tumbler (basket). If the air temperature gets too hot, the thermostat will shut off the burner. The dryer will not run until the air temperature cools down. At this time, the manual reset thermostat **must be** reset manually or the 24 VAC burner circuit will never be completed. Tumbler (Basket) and blower will run but the dryer will not heat. If the temperature sensor opens the display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the thermostat opens the display will read "dRUM SAFETY FAIL" with an audio indication.



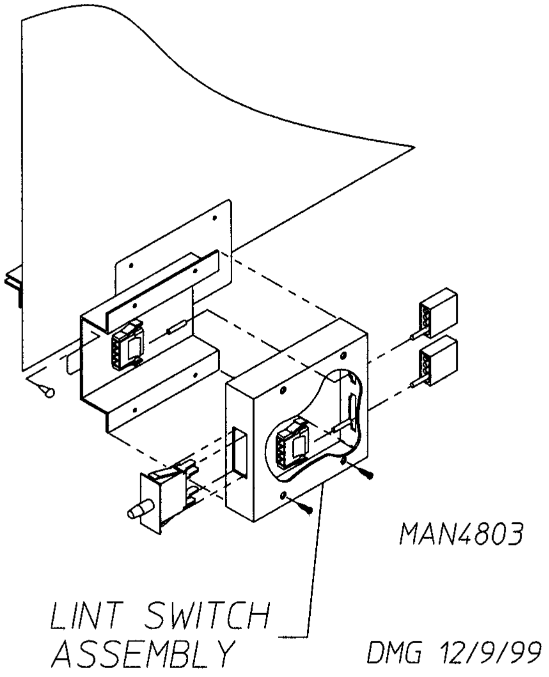
M. LINT DRAWER

The lint drawer is a pull-out type and is located at the bottom of the dryer in the lint compartment. Simply grab the lint drawer handle, slide out the drawer, brush off the lint, and slide the drawer back in. The lint screen **must be** kept clean in order for the dryer to operate properly and efficiently.


LINT SCREEN
LINT SWITCH ASSEMBLY
LINT BASKET
MAN4802
DMG 12/9/99

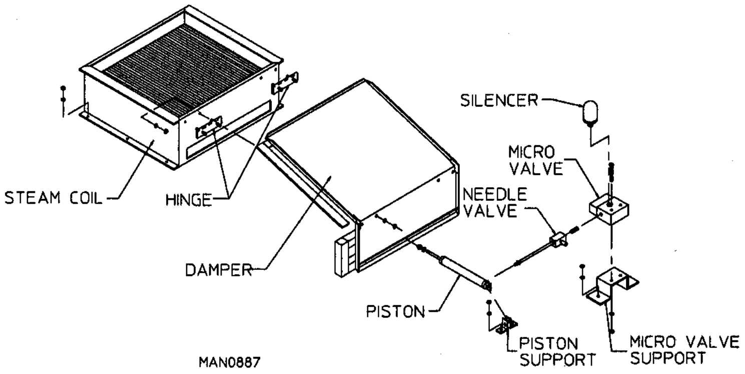
N. LINT DRAWER SWITCH

The lint drawer switch is located in the lint compartment and attached to the side of the lint drawer track. The lint drawer switch insures that the dryer will operate only when the lint drawer is completely closed. This is a safety device and **should never be** disabled.


MAN4803
LINT SWITCH ASSEMBLY
DMG 12/9/99

O. STEAM DAMPER SYSTEM

The newest type system is called the steam damper. It is shown to the right and it uses a piston with compressed air to open and close the steam damper which in turn allows the air to flow either through the coil for heat, or under the coil for cool down. Air supply is 80 PSI +/- 10 PSI (5.51 bars +/- 0.69 bars).


SILENCER
MICRO VALVE
NEEDLE VALVE
STEAM COIL
HINGE
DAMPER
PISTON
PISTON SUPPORT
MICRO VALVE SUPPORT
MAN0887

SECTION V

SERVICING

INTRODUCTION

ALL electrical and mechanical service or repairs **should be** made with the electrical power to the dryer disconnected (power off).

WARNING: PERSONAL INJURY COULD RESULT.

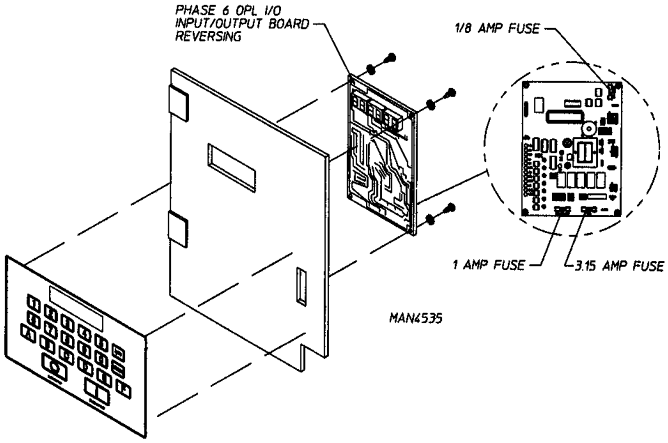
The information provided in this section **should not be** misconstrued as a device for use by an untrained person making repairs. Service work **should be** performed by competent technicians in accordance with local, state, and federal codes. When contacting the factory for assistance, always have the dryer model and serial numbers available.

CAUTION: Observe **ALL** safety precautions displayed on the dryer or specified in this manual before and while making repairs.

Before considering replacement, make sure that **ALL** connectors are in place and making proper contact.

A. COMPUTER CONTROLS

To Replace Computer Control Panel

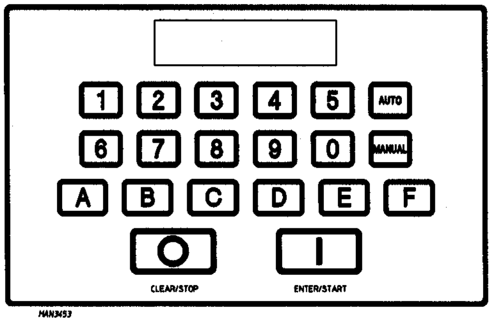


1. Discontinue electrical power to the dryer.
2. Disconnect main power harness from rear of computer by squeezing locking tabs and pulling connector straight back.
3. Disconnect the "green" ground wire from the computer.
4. To remove control panel assembly from control box, gently tap the bottom of the control panel upward and lift off the hinges.
5. Install new control panel assembly by reversing this procedure.
6. When replacing the computer, the "A" and "B" factors **must be** reprogrammed. (refer to Phase 6 OPL User's Manual [**ADC** Part No. 113022].)

NOTE: The "A" and "B" factors are printed on a label located on the rear of the control panel. (refer to illustration above.)

7. Reestablish electrical power to the dryer.

To Replace Computer



1. Disconnect electrical power to the dryer.
2. Disconnect main power harness from rear of computer by squeezing locking tab and pulling connector straight back.
3. Disconnect the "green" ground wire from the computer.
4. Disconnect keyboard (touchpad) ribbon from computer.
5. Remove the two (2) hex nuts securing the computer to the sheet metal control panel. Remove the board by pulling the other two (2) corners off the clinch studs.
6. Install new computer by reversing this procedure. (refer to illustration on **page 15**.)
7. When replacing the computer, the "A" and "B" factors **must be** reprogrammed. (refer to Phase 6 OPL User's Manual [**ADC** Part No. 113022].)

> **NOTE:** The "A" and "B" factors are printed on a label located on the rear of the control panel (refer to illustration).

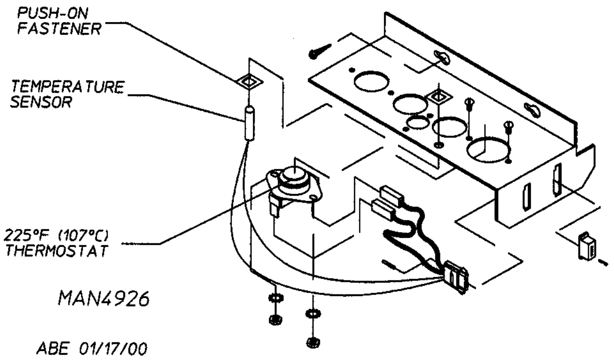
8. Reestablish electrical power to the dryer.

To Replace Keyboard (Touchpad) Label Assembly

1. Discontinue electrical power to the dryer.
2. Unplug keyboard (touchpad) ribbon from rear of the microprocessor computer.
3. Slowly peel off and remove keyboard (touchpad) label assembly from control panel.
4. Peel paper backing off new keyboard (touchpad) label assembly.
5. Holding the new keyboard (touchpad) label assembly close to the control panel, insert the keyboard (touchpad) ribbon through the rectangular slot in the control panel. Align label assembly into position by matching the red viewing window on the label to the rectangular cutout in the panel and gently press into place.
6. Connect keyboard (touchpad) ribbon to the computer.
7. Reestablish electrical power to the dryer.

To Replace Microprocessor Temperature Sensor Probe

1. Discontinue electrical power to the dryer.
2. Remove lint drawer.
3. Remove microprocessor sensor bracket assembly from dryer.
    a. Disconnect sensor bracket harness connector.


PUSH-ON FASTENER
TEMPERATURE SENSOR
225°F (107°C) THERMOSTAT
MAN4926
ABE 01/17/00

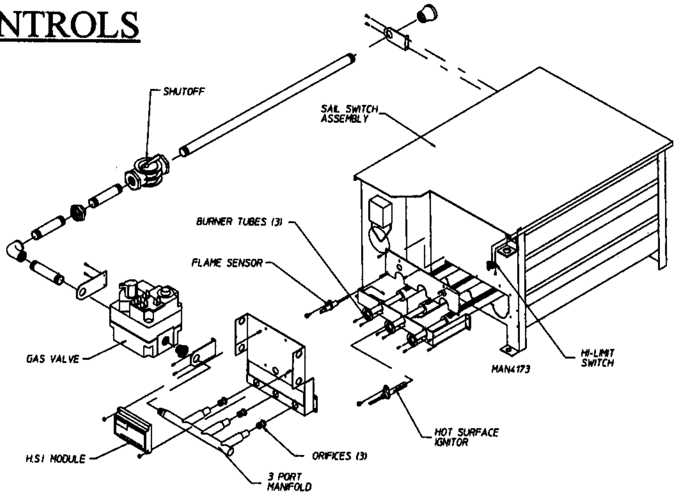
b. Loosen the two (2) Phillips head screws securing bracket assembly to dryer and remove bracket from dryer.

NOTE: *DO NOT* remove screws.

4. Disassemble sensor probe from bracket assembly by removing the top push-on fastener securing the probe to the bracket. Use a small screwdriver to slowly pry the fastener off.
5. Disconnect the two (2) "orange" wires from the high heat (225° F [107° C]) thermostat, and remove modular bracket connector, wires, and probe from bracket assembly.
6. Install new sensor probe assembly (**ADC** Part No. 880251) by reversing procedure.
7. Reestablish electrical power to the dryer.

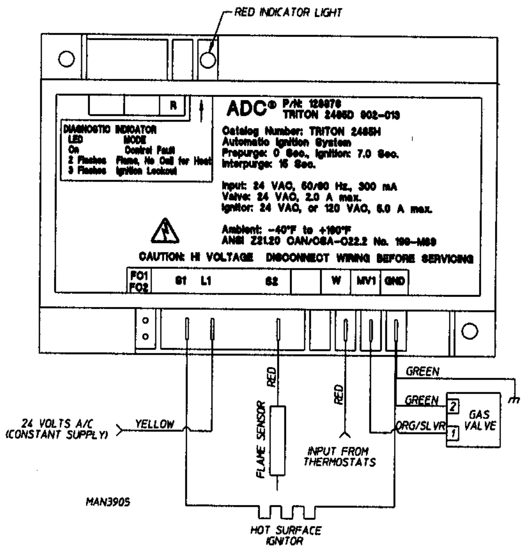
NOTE: If, when electrical power is reestablished, the computer display reads "dSFL," check for a loose connection in the wiring.

B. IGNITION CONTROLS


SHUTOFF
SAIL SWITCH ASSEMBLY
BURNER TUBES (3)
FLAME SENSOR
GAS VALVE
HI-LIMIT SWITCH
MAN4173
HOT SURFACE IGNITOR
H.S.I MODULE
ORIFICES (3)
3 PORT MANIFOLD

To Remove Hot Surface Ignitor
(refer to illustration above)

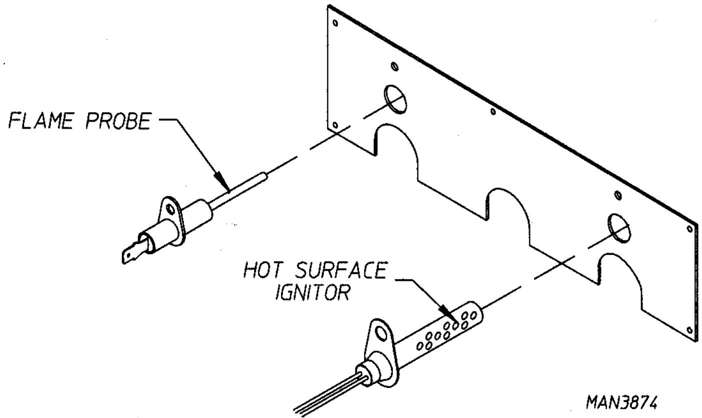
1. Discontinue electrical power to the dryer.
2. Disconnect wire from S1 and GND on the HSI (Hot Surface Ignition) module.
3. Disassemble ignitor from burner by removing the one (1) self tapping screw.
4. Reverse procedure for installation of new ignitor.


RED INDICATOR LIGHT
R
DIAGNOSTIC INDICATOR
LED MODE
On Control Fault
2 Flashes Flame, No Call for Heat
3 Flashes Ignition Lockout
ADC® P/N: 128976
TRITON 2465D 902-013
Catalog Number: TRITON 2465H
Automatic Ignition System
Prepurge: 0 Sec., Ignition: 7.0 Sec.
Interpurge: 15 Sec.
Input: 24 VAC, 50/60 Hz., 300 mA
Valve: 24 VAC, 2.0 A max.
Ignitor: 24 VAC, or 120 VAC, 5.0 A max.
Ambient: -40°F to +160°F
ANSI Z21.20 CAN/CSA-C22.2 No. 199-M89
CAUTION: HI VOLTAGE DISCONNECT WIRING BEFORE SERVICING
FO1
FO2
S1
L1
S2
W
MV1
GND
RED
RED
GREEN
GREEN
ORG/SLVR
2
1
GAS VALVE
24 VOLTS A/C (CONSTANT SUPPLY)
YELLOW
FLAME SENSOR
INPUT FROM THERMOSTATS
MAN3905
HOT SURFACE IGNITOR

NOTE: Before reestablishing electrical power to the dryer visually check the following (refer to illustration above).

5. Reestablish procedure for installation of new ignitor.

To Remove Flame Sensor Probe



1. Discontinue electrical power to the dryer.
2. Disconnect the "red" wire from the flame sensor probe which goes to S2 on the HSI (Hot Surface Ignition) module.
3. Disassemble flame sensor probe from burner by removing the one (1) self tapping screw.
4. Reverse procedure for installation of new flame sensor probe.

NOTE: Before reestablishing electrical power to the dryer visually check the following (refer to illustration above).

5. Reestablish procedure for installation of new ignitor.

HSI Ignitor Flame Sensor Probe

1. Disconnect electrical power to the dryer.
2. Disconnect the hot surface ignitor wires S1 and ground (GND) on the HSI (Hot Surface Ignition) Module.
3. Disassemble Hot Surface Ignitor Probe from the burner by removing the one (1) self tapping screw.
4. Reverse procedure for installation of new hot surface ignitor.

NOTE: Before reestablishing electrical power to the dryer visually check the following (refer to illustration above).

NOTE: ***DO NOT WRAP THE HOT SURFACE IGNITOR WIRES AND THE FLAME ELECTRODE WIRE TOGETHER. IMPROPER OPERATION MAY RESULT. THEY MAY RUN ALONGSIDE EACH OTHER.***

5. Reestablish procedure for installation of new ignitor.

To Replace Gas Valve (Refer to burner illustration on previous page **[page 17]**.)

1. Discontinue electrical power to the dryer.
2. Close shut-off valve(s) in gas supply line.
3. Disconnect gas valve wiring.

NOTE: Identify location of each wire for correct reinstallation.

4. Break union connection before gas valve.

5. Loosen and remove four (4) screws securing pipe brackets to burner.

6. Remove gas valve and manifold assembly from dryer.

7. Remove valve mounting bracket, manifold, and piping from gas valve.

8. Reverse procedure for installing new gas valve.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Replace Main Burner Orifices

1. Refer to "To Replace Gas Valve" and follow ***Step #1 through Step #6.***

2. Unscrew main burner orifices and replace.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

3. Reversing the removal procedure for reinstalling.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Test and Adjust Gas (Water Column) Pressure

There are two (2) types of devices commonly used to measure water column pressure. They are spring and mechanical-type gauges and manometers. The spring and mechanical-type gauge is not recommended, because it is easily damaged and not always accurate. A manometer is simply a glass or transparent plastic tube with a scale in inches. When filled with water and pressure applied, the water in the tube rises showing the exact water column pressure.

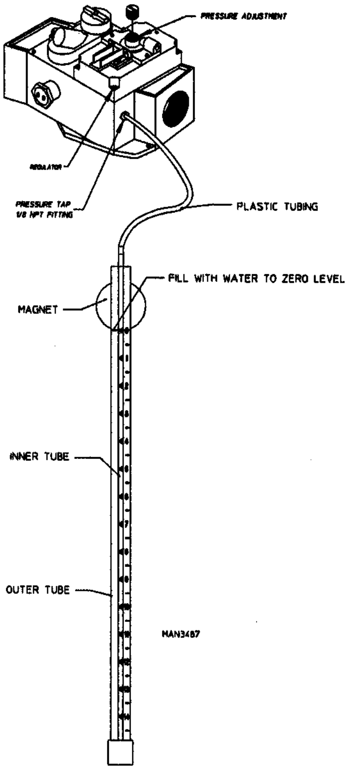
NOTE: Manometers are available from the factory by ordering **ADC** Part No. 122804.

1. To Test Gas Water Column (W.C.) Pressure:

   a. Connect water column test gauge connection to gas valve pressure tap (1/8" NPT). This pressure tap is located on the outlet (manifold) side of the valve.

   b. Start dryer. With burner on, the correct water column reading in inches would be:

   Natural Gas - 3.5 Inches Water Column (8.7 mb).
   L.P. Gas - 10.5 Inches Water Column (26.1 mb).



2. To Adjust Water Column Pressure (natural gas only, L.P. gas **must be** regulated at source):

   a. Remove the slotted vent cap on the top of the valve.

   b. Turn the slotted adjustment screw located on top of the valve next to the terminals. Turn clockwise (CW) to increase manifold pressure and counterclockwise (CCW) to decrease.

NOTE: If correct W.C. pressure **cannot** be achieved, problem may be due to an undersized gas supply line, a faulty or underrated gas meter, etc.

To Convert from Natural Gas to L.P. Gas

NOTE: **ALL** dryers are sold as natural gas, unless otherwise specified at the time the dryer order was placed. For L.P. gas the dryer ***must be*** converted as follows.

Parts required for conversion: L.P. Kit P/N 881868. (For butane gas or elevations over 2,000 feet [609.6 meters], contact factory.)

1. Refer to "To Replace Gas Valve" and follow ***Step #1 through Step #6***.

   a. For models with 3/4" White-Rodgers valve.

      1) Remove top vent cap.

      2) Insert spring and pin.

      3) Replace vent cap.

2. Unscrew main burner orifices and replace with L.P. orifices.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

3. Reverse the procedure for reinstalling valve assembly to the dryer.

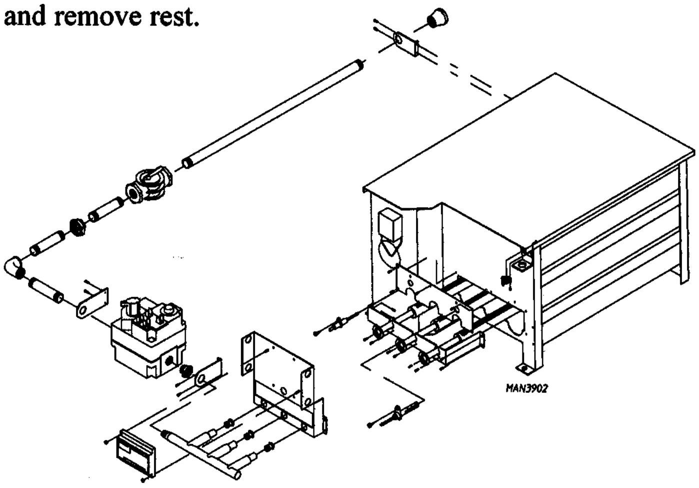
WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

NOTE: There is no regulator provided in an L.P. dryer. The column pressure ***must be*** regulated at the source (L.P. tank) or an external regulator ***must be*** added to each dryer.

To Replace Burner Tubes

1. Refer to "To Replace Gas Valve" and follow ***Step #1 through Step #6***.
2. Remove four (4) screws securing manifold rest and remove rest.
3. Remove the screws securing the front flanges of the burner tubes to the burner tube rest.
4. Remove the screws securing the burner tube rest to the oven and remove this rest.
5. Remove screws securing the sight hole disk and burner box cover plate to the oven and remove both of these pieces.
6. Remove burner tubes by sliding them out.
7. Replace by reversing procedure.

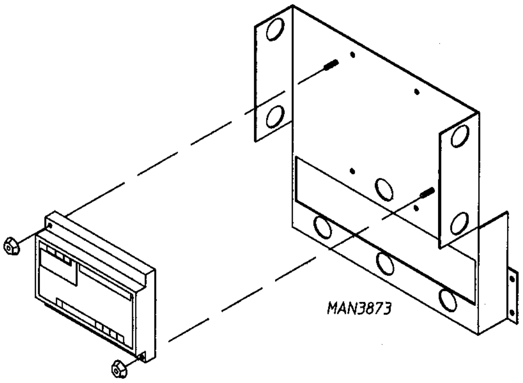


WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Replace HSI (Hot Surface Ignition) Module

1. Discontinue electrical power to the dryer.
2. Remove the wires connected to the terminal strip at the bottom of the module. (Mark correct location of each wire to aid in replacement on new module.)
3. Remove the four (4) pal nuts securing the module to the mounting bracket.



4. Replace module by reversing procedure. (refer to illustration on **page 17** for proper wire locations.)
5. Reestablish electrical power to the dryer.

C. THERMOSTATS

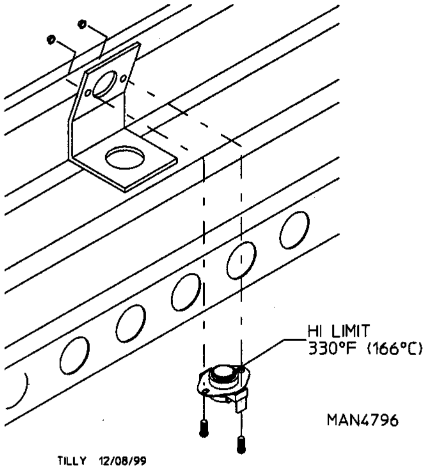
To Replace Manual Reset Burner Hi-Limit (330° F [166° C]) Thermostat (Gas Models Only)

1. This thermostat is an important safety device as an added protection against failure of the airflow (sail switch) to open in the event of motor failure or reduced airflow conditions.

IMPORTANT: **UNDER NO CIRCUMSTANCES** should heat circuit safety devices ever be disabled.

NOTE: Models manufactured as of 1998 are equipped with a manual reset hi-limit thermostat.

1. Discontinue electrical power to the dryer.
2. Disconnect wires from hi-limit thermostat.
3. Remove the two (2) screws, washers, and nuts securing thermostat to the bracket. Remove thermostat.
4. Reversing procedure for installing new thermostat.
5. Reestablish electrical power to the dryer.

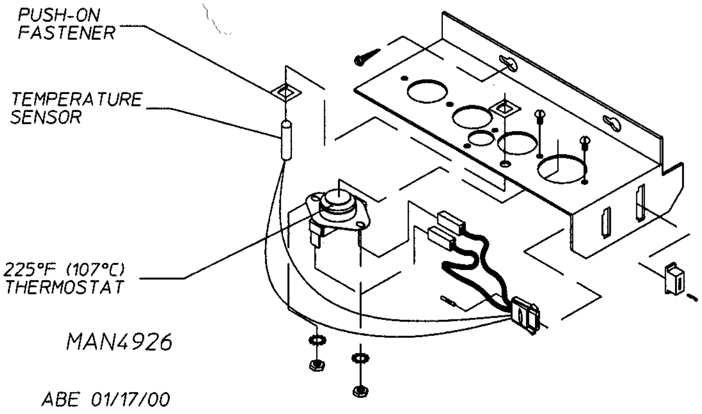


To Replace Manual Reset Tumbler Hi-Heat Protector (225° F [107° C]) Thermostat

This thermostat is part of the "sensor bracket assembly" and is secured to the underside of the tumbler (basket) wrapper in the lint compartment. As a safety device, this thermostat will open (shut off) the heating unit circuit if an excessive temperature occurs. The dryer motor will remain on, even if the thermostat is open.

IMPORTANT: **UNDER NO CIRCUMSTANCES** should heat safety devices be disabled.

1. Disconnect electrical power to the dryer.
2. Remove lint drawer. Remove two (2) screws securing lint door and remove lint door.
3. Locate sensor bracket assembly and loosen the two (2) Phillips head screws securing bracket assembly to the tumbler (basket) wrapper.



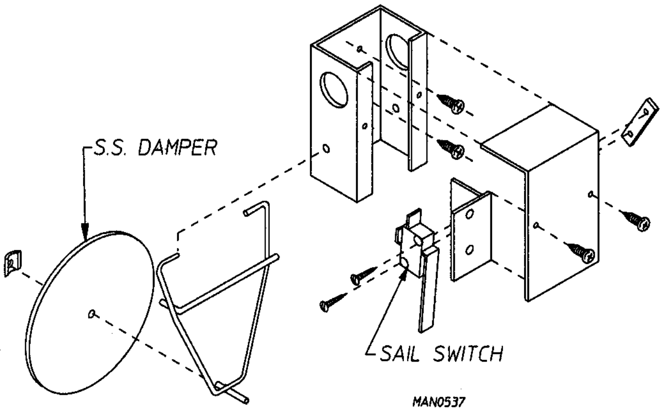
NOTE: ***DO NOT*** remove the screws.

4. Remove bracket assembly by slightly sliding bracket towards the rear of the dryer and to the left.
5. Disconnect sensor bracket harness connector and remove bracket assembly from dryer.
6. Disconnect the two (2) "orange" wires from thermostat.
7. Disassemble thermostat from bracket assembly by removing the two (2) mounting screws, washers, and nuts.
8. Reverse this procedure for installing a hi-heat protector thermostat.
9. Reestablish electrical power to the dryer.

D. SAIL SWITCH ASSEMBLY (Gas and Electric Models Only)

The sail switch is a heat circuit safety device which controls the burner circuit only. When the dryer is operating and there is proper airflow, the sail switch damper pulls in and closes the sail switch. Providing **ALL** the other heat-related circuits are functioning properly, ignition **should now be** established. If an improper airflow occurs, the sail switch damper will release, and the circuit will open.

To Replace Sail Switch



1. Discontinue electrical power to the dryer.
2. Remove the two (2) screws which hold the sail switch box cover to sail switch box.
3. Disconnect the two (2) wires from the switch.
4. Disassemble sail switch from mounting bracket by removing the two (2) screws securing switch in place.
5. Reverse this procedure for installing new sail switch. Adjust sail switch as described in the next section.

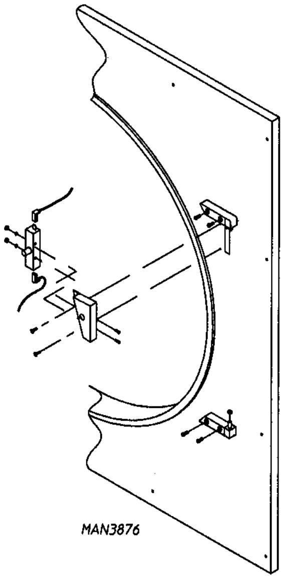
To Adjust Sail Switch

With the dryer operating at a high temperature setting, pull the sail switch damper away from the burner. The sail switch should open and extinguish the burner. The dryer will continue to run for three (3) minutes or until 100° F (38° C) is reached. The computer will display **no airflow**. If the sail switch circuit does not operate as described, bend the actuator arm of the sail switch accordingly until proper operation is achieved. To check proper "open" position of sail switch, open main door, manually depress main door switch, and start dryer. With the main door open and the dryer operating, the sail switch circuit **should be** open, and the burner should not come on. The computer will display **no airflow**.

CAUTION: ***DO NOT*** abort this switch by taping or screwing sail switch damper to burner. **PERSONAL INJURY or FIRE COULD RESULT.**

E. FRONT PANEL and MAIN DOOR ASSEMBLIES

To Replace Main Door Switch



CURRENT PRODUCTION

1. Discontinue electrical power to the dryer.
2. Open main door.
3. Remove the two (2) Phillips head screws holding the main door switch bracket assembly in place.
4. Disconnect wiring from switch assembly.
5. Remove the two (2) screws which secure the switch to the housing.

6. Reverse this procedure for installing new door switch assembly.
7. Reestablish electrical power to the dryer.

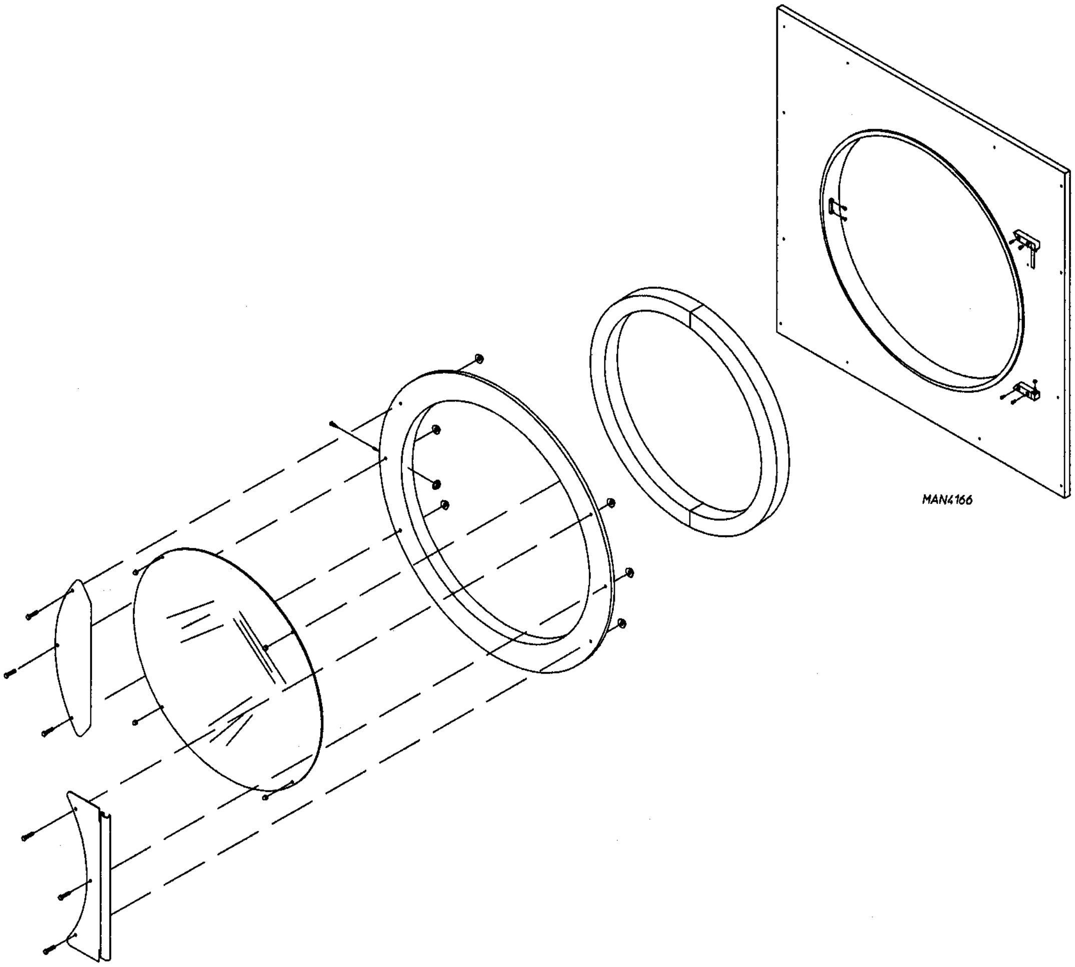
IMPORTANT: UNDER NO CIRCUMSTANCES should the door switch be disabled.

To Replace Main Door Assembly

1. Open main door.
2. Holding the door upward remove the two (2) screws from the top hinge block.
3. Lift the door up to remove.
4. Reverse this procedure for reinstalling new main door assembly.

To Install New Main Door Glass

1. Remove main door assembly from dryer (follow main door removal procedure).
2. Lay main door on flat surface with the back of the door facing down.
3. Remove the four (4) #10-32 acorn nuts securing the glass to the door.



4. Remove glass and clean ALL old sealant off main door. This area **must be** clean for correct bonding.
5. Place a bead of silicone (**ADC** P/N 170730) around the edge door and lightly press glass into place.
6. Reinstall the four (4) #10-32 acorn nuts that were removed in ***Step #3***.

IMPORTANT: ***DO NOT*** press hard or the silicone thickness between the glass and door **will be** reduced, resulting in poor bonding.

7. The door assembly **should now be** put in an area where it will not be disturbed for at least 24 hours. Depending on the conditions, the curing time of this adhesive is 24 to 36 hours.
8. After the curing period, install main door on dryer by reversing ***Step #1***.

To Replace Front Panel

1. Discontinue electrical power to the dryer.
2. Remove bottom lint drawer assembly.
3. Remove the screws securing the front panel to the dryer.
4. Disconnect the two (2) door switch wires located behind the front panel.
5. Remove the front panel.

IMPORTANT: When pulling the front panel off, the door switch harness in the upper right hand corner ***must be*** unplugged.

NOTE: The main door assembly can be removed to make the panel removal easier. Refer to "To Replace Main Door Assembly" directions.

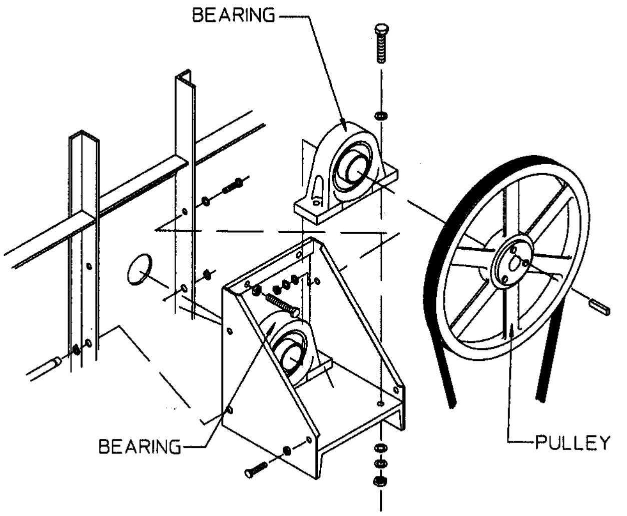
6. Reinstall the new front panel by reversing ***Step #1 through Step #4***.
7. Reestablish electrical power to the dryer.

To Replace Main Door Hinge Block

1. Discontinue electrical power to the dryer.
2. Follow procedure for removal of main door assembly for top hinge removal.
3. Remove the two (2) screws from the bottom hinge block.
4. Reassemble by reversing removal procedure.
5. Reestablish electrical power to the dryer.

F. PULLEYS

To Replace Tumbler (Basket) Pulley

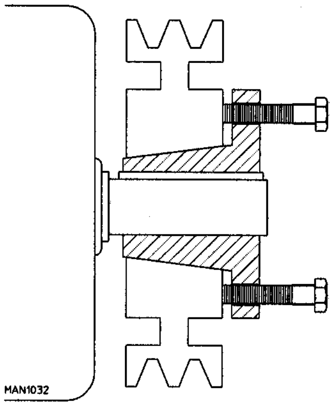


MAN0536

1. Loosen V-belts. Rotate pulley and roll V-belts out of grooves.
2. Remove cap screws from the bushing.
3. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A."
4. Remove bushing, pulley, and key.
5. Assemble bushing and sheave as shown in figure "B." When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
6. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
7. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 30 ft-lbs. (41 Nm). If greater tightening forces are applied, excess pressures **will be** created in the hub of the mounted sheave which may cause it to crack.

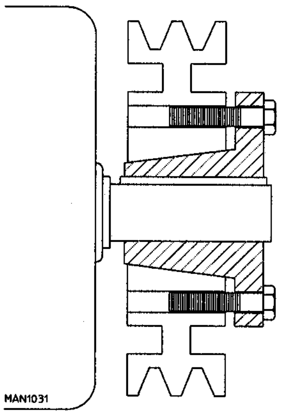
A



To Replace Small Idler Pulley

1. Loosen V-belts. Rotate pulley and roll V-belts out of grooves.
2. Remove cap screws from the bushing.
3. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A."
4. Remove bushing, pulley, and key.
5. Assemble bushing and sheave as shown in figure "B." When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
6. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.

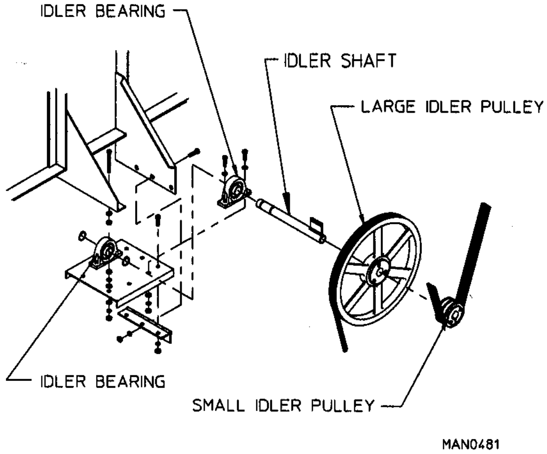
B



7. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

> **IMPORTANT:** Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 6 ft-lbs. (8 Nm), if greater tightening forces are applied, excess pressures **__will__ __be__** created in the hub of the mounted sheave which may cause it to crack.

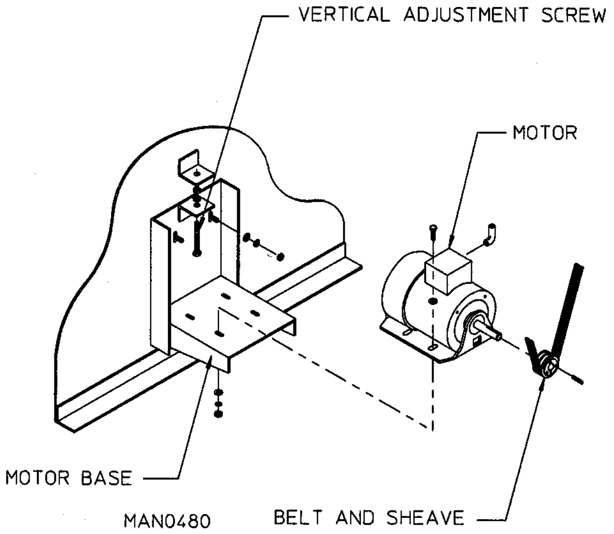
To Replace Large Idler Pulley



1. Loosen V-belts. Then, rotate pulley and roll V-belts out of grooves.
2. Remove cap screws.
3. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on previous page.
4. Remove bushing, pulley, and key.
5. Assemble bushing and sheave as shown in figure "B" on previous page (**__page 26__**). When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
6. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
7. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

> **IMPORTANT:** Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 15 ft-lbs. (20 Nm). If greater tightening forces are applied, excess pressures **__will__ __be__** created in the hub of the mounted sheave which may cause it to crack.

To Replace Motor Pulley



1. Loosen V-belts. Rotate pulley and roll V-belts out of grooves.
2. Remove cap screws from bushing.
3. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on previous page.
4. Remove bushing, pulley, and key.

5. Assemble bushing and sheave as shown in figure "B" on **page 26**. When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.

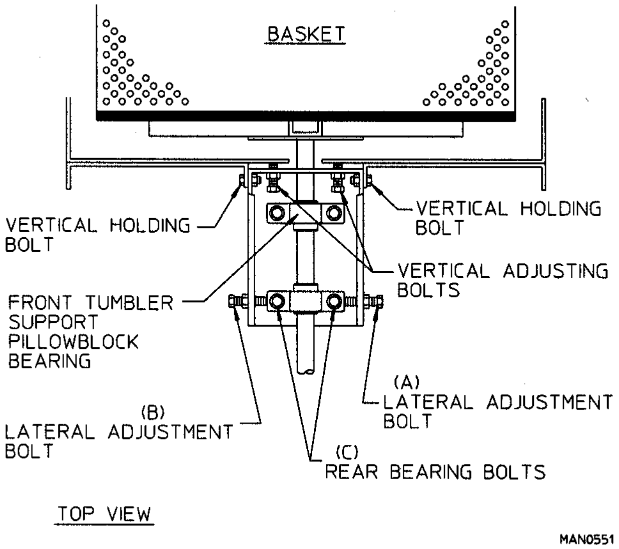
6. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.

7. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 6 ft-lbs., (8 Nm). If greater tightening forces are applied, excess pressures **will be** created in the hub of the mounted sheave which may cause it to crack.

G. TUMBLER (BASKET) ASSEMBLY

Tumbler (Basket) Alignment (Vertical) (Up and Down Adjustment)


BASKET
VERTICAL HOLDING BOLT
VERTICAL HOLDING BOLT
VERTICAL ADJUSTING BOLTS
FRONT TUMBLER SUPPORT PILLOWBLOCK BEARING
(A) LATERAL ADJUSTMENT BOLT
(B) LATERAL ADJUSTMENT BOLT
(C) REAR BEARING BOLTS
TOP VIEW
MAN0551

1. Discontinue electrical power to the dryer.

2. Remove back guard.

3. Loosen the two (2) vertical holding bolts on the sides at the top of the bearing box. (One [1] on each side).

4. Back off jam nuts on vertical adjustment bolts.

5. Turn these bolts clockwise (CW) evenly to raise tumbler (basket) or counterclockwise (CCW) evenly to lower tumbler (basket).

6. Rotate tumbler (basket) from front and check alignment with front door opening.

7. Leave a larger gap from the inside ring on the top of the front panel opening to the tumbler (basket) and a smaller gap on the bottom to compensate for the weight of the clothes when wet.

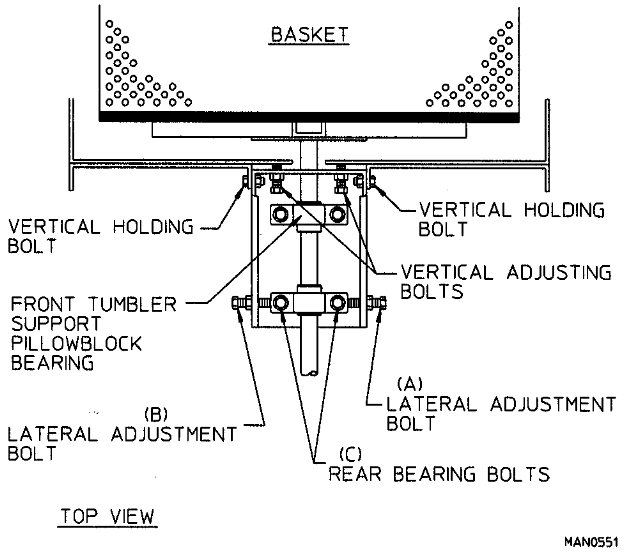
8. Retighten the two (2) vertical holding bolts on the sides, at the top of the bearing box, and the jam nuts on the two (2) vertical adjustment bolts.

9. Check tumbler (basket) drive belt for proper tension. Adjust if necessary. (Refer to Section I, page 32.)

10. Replace back guard.

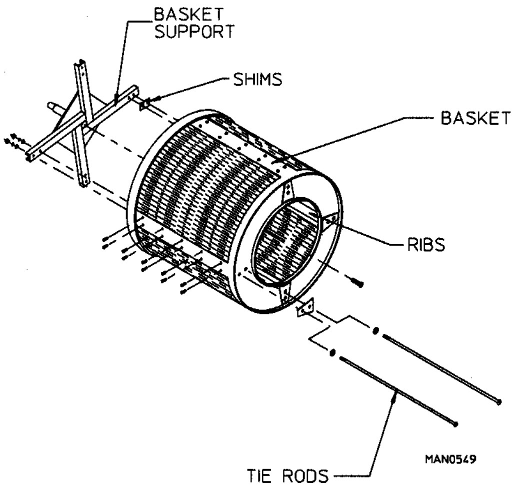
11. Reestablish electrical power to the dryer.

Tumbler (Basket) Alignment (Lateral) (Side to Side Adjustment)


BASKET
VERTICAL HOLDING BOLT
VERTICAL HOLDING BOLT
VERTICAL ADJUSTING BOLTS
FRONT TUMBLER SUPPORT PILLOWBLOCK BEARING
(A) LATERAL ADJUSTMENT BOLT
(B) LATERAL ADJUSTMENT BOLT
(C) REAR BEARING BOLTS
TOP VIEW
MAN0551

1. Discontinue electrical power to the dryer.
2. Remove back guard.
3. Loosen rear pillow block bearing bolts (C).
4. Back off jam nuts on the two (2) lateral adjustment bolts (A) and (B).
5. Simultaneously loosen one bolt and tighten the other. This will move the rear pillow block bearing. Center the tumbler (basket) in the wrapper cavity.
6. Tighten and secure both lateral adjustment bolts (A) and (B) and jam nuts.
7. Tighten pillow block bearings bolts (C) loosened in ***Step #3***.
8. Replace back guard.
9. Reestablish electrical power to the dryer.

To Replace Tumbler (Basket) or Tumbler (Basket) Support


BASKET SUPPORT
SHIMS
BASKET
RIBS
TIE RODS
MAN0549

1. Discontinue electrical power to the dryer.
2. Follow procedure for removal of main door assembly.
3. Follow procedure for removal of front panel assembly.
4. Remove back guard.
5. Remove tumbler (basket) belts.
6. Remove tumbler (basket) pulley.
7. Remove tumbler (basket) assembly and support.
   a. Loosen the two (2) set screws on both the pillow block bearing collars.
   b. Remove the retaining rings from the grooves of the tumbler (basket) shaft.
   c. Remove the tumbler (basket) and support assembly from the front of the dryer. If the tumbler (basket) **cannot** be removed freely, clean the shaft area and spray WD-40 or similar lubricant. With a block of wood against the shaft end, strike the block of wood with a hammer or mallet to move the shaft past any burrs made by the set screws.

IMPORTANT: Never strike the shaft directly with a hammer.

8. Remove tumbler (basket) from tumbler (basket) support.
   a. Remove the bolt in the center of the tumbler (basket) back wall.
   b. Loosen and remove the eight (8) sets of nuts and washers from tumbler (basket) tie rods. Remove the eight (8) tie rods.
   c. Replace either tumbler (basket) or tumbler (basket) support by reversing procedure.

NOTE: Shims might be needed between tumbler (basket) and tumbler (basket) support to insure proper balancing of tumbler (basket).

9. Reassemble components onto dryer by reversing ***Step #2 through Step #8***.
10. Check tumbler (basket) vertical/lateral alignment and adjust if necessary.
11. Replace back guard.
12. Reestablish electrical power to the dryer.

H. BEARINGS (Refer to illustrations in section F "Pulleys" on **page 26**)

To Replace Rear Tumbler (Basket) Support Pillow Block Bearing

1. Discontinue electrical power to the dryer.
2. Remove back guard.
3. Remove tumbler (basket) pulley.
4. Loosen lateral adjustment jam nuts and bolts. (Refer to illustration in section G "Tumbler (Basket) Alignment")
5. Loosen two (2) set screws from rear pillow block bearing collar.
6. Remove the rear bearing bolts, securing bearing to bearing mount. Remove bearing.
7. Replace by reversing ***Step #3 through Step #6***.
8. Adjust both lateral and vertical tumbler (basket) alignment.
9. Replace back guard.
10. Reestablish electrical power to the dryer.

To Replace Front Tumbler (Basket) Support Pillow Block Bearing

1. Discontinue electrical power to the dryer.
2. Remove back guard.
3. Follow ***Step #3 through Step #6*** from "To Replace Rear Tumbler (Basket) Support Pillow Block Bearing."

4. Remove the two (2) retaining rings from the tumbler (basket) shaft.

5. Remove the two (2) bolts holding the front tumbler (basket) support pillow block bearing to the dryer.

6. Loosen bearing collar set screws (2) and as the end of the tumbler (basket) shaft is lifted up slightly, slide the bearing off the shaft.

7. Prop a block of wood between the tumbler (basket) shaft and the bearing mount to keep the tumbler (basket) level and in place.

8. Replace by reversing ***Step #2 through Step #6***.

> **NOTE:** Before replacing back guard, check tumbler (basket) lateral/vertical adjustment, as well as, belt adjustment and readjust if necessary.

9. Reestablish electrical power to the dryer.

To Replace Front Idler Shaft Pillow Block Bearing
(Bearing nearest the back of the dryer)

1. Discontinue electrical power to the dryer.

2. Remove V-belts from idler pulleys.

3. Remove bolts holding each idler pillow block bearing to mount.

4. Remove idler shaft (with both bearings and idler pulleys still attached) from dryer.

5. Remove end retaining ring and loosen the two (2) set screws in the bearing race collar.

6. Slide bearing off the shaft.

7. Replace bearing by reversing procedure.

8. Align idler pulley with tumbler (basket) pulley before tightening bolts.

9. Reestablish electrical power to the dryer.

To Replace Rear Idler Shaft Pillow Block Bearing

1. Follow ***Step #1 through Step #3*** from "To Replace Front Idler Shaft Pillow Block Bearing."

2. Remove retaining rings on each side of forward idler shaft pillow block bearing.

3. Loosen the two (2) set screws on each bearing collar.

4. Slide both bearings off the shaft.

5. Replace by reversing procedure.

6. Reestablish electrical power to the dryer.

I. V-BELTS

V-belts should have proper tension. If too loose, they will slip, if too tight, excessive wear on the bearings will result. If the pulleys are not properly aligned, excessive belt wear will result. Proper belt tension will allow 1/2" displacement under normal thumb pressure at mid span of belt.

NOTE: Belts ***must always be*** replaced in pairs (matched sets).

V-Belt Tension Adjustment (Tumbler [Basket] to Idler)

1. Discontinue electrical power to the dryer.
2. Back off jam nuts on idler adjustment belts.
3. Tighten belts by turning both bolts evenly clockwise (CW). (Turn counterclockwise [CCW] to loosen belts.)
4. Check vertical plane of idler pulley for parallel alignment with tumbler (basket) pulley.
5. If realignment is required, loosen tumbler (basket) pulley and bushing, and move tumbler (basket) pulley to proper position.
6. Retighten jam nuts.
7. Reestablish electrical power to the dryer.

V-Belt Tension Adjustment (Motor to Idler)

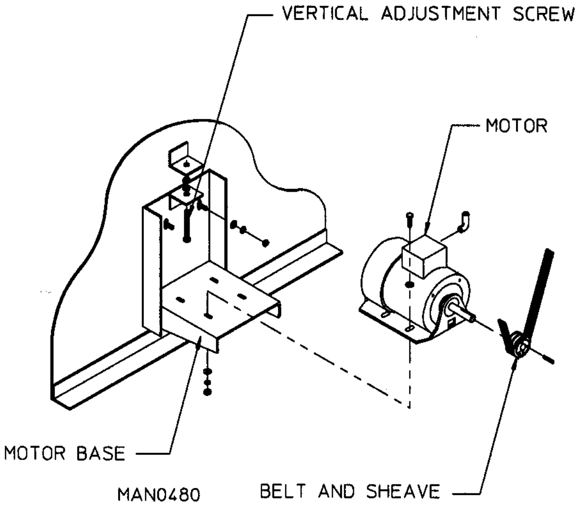
1. Discontinue electrical power to the dryer.
2. Loosen the nuts on the four (4) studs holding the drive motor mount to the back of the dryer.
3. Loosen the jam nuts on the adjustment screw out the top of the motor mount.
4. Turn the adjustment screw to lower the motor mount (to tighten the belts) or raise the motor mount (to loosen the belts).
5. Check the vertical plane of the motor pulley and idler pulley for parallel alignment.
6. If realignment is required, loosen motor pulley and bushing and move motor pulley to proper position.
7. Retighten motor mount bolts and jam nuts.
8. Reestablish electrical power to the dryer.

To Replace V-Belts

1. Loosen tension on V-belts so that they can easily be rolled off pulleys.
2. Replace V-belts.
3. Retighten V-belts and adjust tension and alignment per previous instructions.

NOTE: Always replace belts in matched sets (2 belts).

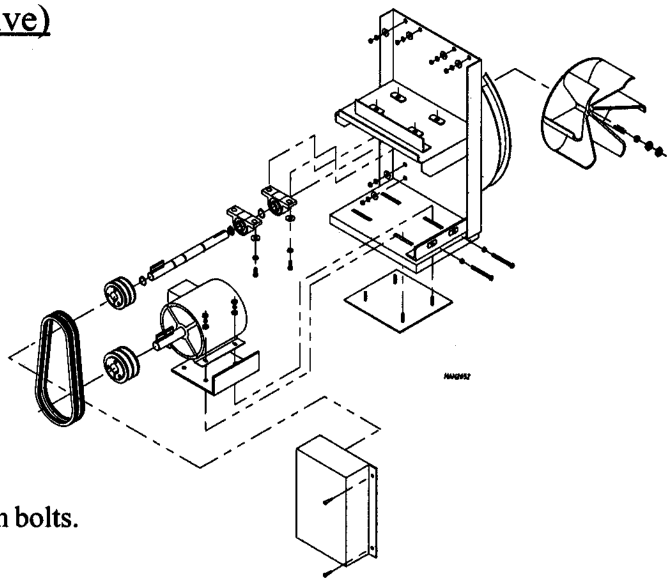
J. MOTORS



To Replace Drive Motor

1. Discontinue electrical power to the dryer.
2. Remove drive belts.
3. Disconnect wiring harness from motor.
4. Remove bolts holding motor to mount and replace with new motor. **DO NOT** tighten bolts.
5. Remove pulley from old motor and install on new motor.
6. Align motor pulley with idler pulley and align motor shaft with idler shaft and tighten bolts.
7. Replace belts and adjust belt tension.
8. Retighten bolts.
9. Reestablish electrical power to the dryer.

To Replace Impellor Motor (Fan Shaft Drive)



1. Discontinue electrical power to the dryer.
2. Remove drive belts.
3. Disconnect wiring harness from motor.
4. Remove bolts holding motor to mount and replace with new motor. **DO NOT** tighten bolts.
5. Remove pulley from old motor and install on new motor.
6. Align motor pulley with fan shaft pulley and tighten bolts.
7. Replace belts and adjust belt tension.
8. Retighten bolts.
9. Reestablish electrical power to the dryer.

K. IMPELLOR

1. Discontinue electrical power to the dryer.
2. Remove the left side panel to access the fan shaft mount assembly.
3. Remove the two (2) left handed jam nuts that hold the impellor to the fan shaft.
4. Remove the impellor, washers, and the key.
5. Replace the impellor, key, washers, left handed jam nuts, and the side panel.
6. Reestablish electrical power to the dryer.

L. LINT DRAWER ASSEMBLY

To Replace Lint Screen

1. Pull out lint drawer.
2. Remove lint screen from lint drawer.
3. Drop new lint screen in place.
4. Slide lint drawer back into dryer.

To Replace Lint Drawer Switch

1. Disconnect electrical power to the dryer.
2. Remove lint drawer and lint door.
3. Disconnect both 4-pin connectors at the rear of the lint switch cover.
4. Remove the two (2) hex nuts securing the lint switch guard weldment to the lint drawer track.
5. Remove screw from the lint switch cover and disconnect the two (2) terminals of the switch.
6. Remove switch by pressing tabs together and push switch out.
7. Install new switch by reversing procedure.

SECTION VI

TROUBLESHOOTING

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

The information provided will help isolate the most probable component(s) associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken/shorted wire may be at fault where electrical components are concerned...and not necessarily the suspected component itself.

IMPORTANT: When replacing blown fuses, the replacement ***must be*** of the exact rating as the fuse being replaced. The information provided ***should not be*** misconstrued as a handbook for use by an untrained person in making repairs.

WARNING: ALL SERVICE and TROUBLESHOOTING *SHOULD BE* PERFORMED BY A QUALIFIED PROFESSIONAL or SERVICE AGENCY.

WARNING: WHILE MAKING REPAIRS, OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE DRYER or SPECIFIED IN THIS MANUAL.

A. No display on computer...

1. Open circuit breaker switch or blown fuse.
2. Tripped blower motor overload.
3. Faulty wiring connection.
4. Faulty transformer.
5. "EMERGENCY STOP" (E-Stop) button is depressed.
6. Faulty microprocessor controller (computer).

B. Computer will not accept keyboard (touchpad) entries...

1. Keyboard (touchpad) ribbon is not plugged into computer securely.
2. Faulty keyboard (touchpad).
3. Faulty microprocessor controller (computer).

C. Dryer will not start, but computer display indicators are on...

1. Failed contactors.
2. Failed arc suppressor (A.S.) board.
3. Failed microprocessor controller (computer).
4. Failed motors.

D. Drive motor runs, burner is on, but tumbler (basket) will not turn...

1. Broken, damaged, or loose V-belt.
2. Belts contaminated (oil, grease, etc.).
3. Loose or broken pulley.

E. Dryer operates but is taking too long to dry...

1. Improperly programmed microprocessor controller (computer).
2. An inadequate exhaust duct work system.
3. Restriction in exhaust system.
4. Insufficient make-up air.
5. Poor housekeeping.
    a. Dirty or clogged lint screen.
6. Washing machine extractors are not performing properly.
7. An exceptionally cold/humid or low barometric pressure atmosphere.
8. The supply gas may have a low heating valve, check with local gas supplier.
9. Failed temperature sensor (temperature calibration is incorrect).
10. Failed microprocessor controller (computer).

F. Thermal overload for drive motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Motor vents are blocked with lint.
4. Failed motor.
5. Failed overload.
6. Out of balance impellor (fan).
7. Insufficient make-up air.

G. Overload for impellor (fan) motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Motor vents are blocked with lint.
4. Failed motor.
5. Failed overload.
6. Insufficient make-up air.

H. Burner hi-limit safety thermostat is tripping...

1. Insufficient exhaust duct work, size, or restriction in exhaust system.
2. Insufficient make-up air.
3. Lint screen needs cleaning.
4. Damaged impellor.

NOTE: For models with the manual reset hi-limit thermostat refer to **page 23**.

I. Display reads "Temp Sensor Failure Check Temp Sensor Fuse." Dryer Sensor Circuit Failure...

1. Check 1/8-amp fuse on microprocessor controller (computer).
2. Faulty microprocessor controller (computer) temperature sensor probe.
3. Open circuit in either one (1) of two (2) wires leading from the sensor probe to the computer...
    a. Connection at sensor bracket assembly connector.
    b. Connection at computer harness connector.
4. Faulty microprocessor controller (computer).

J. Dryer does not start. Display reads "main door" or "lint door" with an audio indication...

1. Main door is open.
2. Lint drawer is open.
3. Faulty main door or lint door switch.
4. Open circuit in either main door or lint drawer switch harnesses.
5. Faulty 24 VAC transformer.

K. There is excessive vibration coming from the tumbler (basket)...

1. Tumbler (basket) is out of adjustment.
2. Drive shaft or idler shaft is out of alignment.
3. Faulty pillow block bearing.
4. Faulty tumbler (basket) wheel.
5. Drive motor and shaft not aligned.

SECTION VII

PHASE 6 OPL SYSTEM DIAGNOSTICS

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

ALL major circuits, including door, microprocessor temperature sensor, heat and motor circuits are monitored. The Phase 6 OPL microprocessor controller (computer) will inform the user, via the L.E.D. (light emitting diode) display of certain failure codes, along with indicators both in L.E.D. display and at the output of each relay (and door switch circuit) to easily identify failures.

A. DIAGNOSTIC (L.E.D. [light emitting diode] DISPLAY) FAILURE CODES

1. **SAIL SWITCH FAIL-** This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is closed prior to start up the display will read "SAIL SWITCH FAIL" along with an audio indication.

2. **No AIRFLOW-** If the sail switch opens during cycle operation the display will read "No AIRFLOW" along with an audio indication. The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "No AIRFLOW" with an audio indication.

3. **bURNER SAFETY FAIL-** Routine monitors the temperature above the burner. If the burner hi-limit switch opens the display will read "bURNER SAFETY FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "bURNER SAFETY FAIL" with an audio indication.

4. **dRUM SAFETY FAIL-** This routine monitors the tumbler (basket) temperature if the tumbler (basket) hi-limit switch opens prior or during the cycle while the heat was on the machine will display "dRUM SAFETY FAIL." The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "dRUM SAFETY FAIL" with an audio indication.

5. **No HEAT-** This routine monitors the burner ignition. If the burner mis-ignites (does not light) the HSI (Hot Surface Ignition) module will check to see of the microprocessor program has any retries left. The standard retry count is two (2). If the module notices that there are retries left it will purge for one (1) minute then try to ignite the burner again. The HSI module will try this for a total of three (3) times or until there are no retries left. If the burner does not ignite after three (3) attempts the L.E.D. (light emitting diode) display will display the error code "no heat" with an audio indication. When this occurs the machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C).

IMPORTANT: For other countries, such as Australia, the retry count **may not** apply due to local approvals.

6. **bURNER CONTROL FAIL-** This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the Phase 6 microprocessor controller (computer) determines the ignition control has failed. If this occurs when the cycle is active the machine will display "bURNER CONTROL FAIL." If the tumbler (basket) temperature is above 100° F (38° C) the machine will continue to display "bURNER CONTROL FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler (basket) temperature is below 100° F (38° C) upon failure the machine will shut down and display "bURNER CONTROL FAIL" with an audio indication.

7. **bURNER FLAME FAIL-** This routine allows two (2) flame out retries to occur before proceeding into the error. The count of two (2) will be established every time the call for heat was to occur. Only if it reaches the count of two (2) before the tumbler (basket) temperature has reached the set temperature will this error be triggered. The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler (basket) temperature is below 100° F (38° C) upon failure, the machine will shut down and display "bURNER FLAME FAIL" with an audio indication. This process will occur every time the heat output is active.

8. **MAIN DOOR-** This monitors the door circuit. If the machine was not active and the main door was opened the display would read "REAdY." If a program attempt was made with the main doors open the display will read "MAIN dOOR" with an audio indication. If the machine is active and the main door was opened the display would read "MAIN dOOR" with no audio indication and the dryer will shut down. Once the main door has closed the display would read "PRESS START" press the "ENTER/START" key and it will continue the programmed cycle.

9. **LINT dOOR-** This monitors the lint drawer and door circuit. If the machine was not active and the lint drawer and door was opened the display would read "REAdY." If a program attempt was made with the lint drawer and door open the display would read "LINT dOOR" with an audio indication. If the machine is active and the lint drawer and door was opened the display would read "LINT dOOR" with no audio indication and the dryer will shut down. Once the lint door was closed the display would read "PRESS START" press the "ENTER/START" key and it will continue the programmed cycle.

10. **TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE-** This routine monitors the tumbler (basket) temperature. When the temperature sensor or fuse opens with the machine not active the display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the machine was active at the time that the temperature sensor or fuse opened the display would read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE." If the tumbler (basket) temperature is above 100° F (38° C) the machine will continue to display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication and run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler (basket) temperature is below 100° F (38° C) upon failure the machine will shut down and display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. The display will continue to read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" an audio indication will sound for approximately 5 seconds, every 30 seconds until the problem is corrected or the power to the dryer is disconnected (and the problem is corrected).

NOTE: Once the Phase 6 microprocessor controller (computer) detects a problem in the heat circuit, it updates every 30 seconds, so that if the problem was a loose connection in the circuit which corrected itself, the "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" condition would automatically be cancelled and the display will return to "REAdY."

11. **ROTATE SENSOR FAIL-** Indicates a rotational sensor circuit failure meaning that there is a fault somewhere in the tumbler (basket) rotating circuit, or the Phase 6 OPL microprocessor controller (computer) program related to this circuit (program location 2) is set incorrectly. In the active mode it **should be** (ROTATE SENSOR ACTIVE), if the dryer is not equipped with the optional rotational sensor it **should be** set in the nonactive mode (No ROTATE SENSOR).

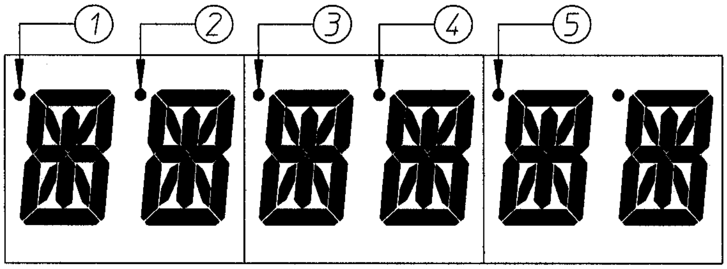
NOTE: **RPM-** This routine monitors the timing response from the existing rotational sensor input and derives a RPM measurement. To display this RPM measurement (press the "ENTER/START" key once and release, then press the "ENTER/START" key a second time and hold. This will display the RPM measurement). The rotational sensor ***must be*** active for operation of this feature.

12. **CHECK MAIN FUSE-** Indicates that the circuit fuse protection which is located on the back side of the Phase 6 microprocessor controller (computer) the display would read "CHECK MAIN FUSE." If the display continues after the fuse has been replaced then it is the fault of the Phase 6 microprocessor controller (computer).

B. L.E.D. (light emitting diode) DISPLAY INDICATORS

The L.E.D. (light emitting diode) indicator dots located on the top portion of the display indicates various Phase 6 OPL computer output functions while a cycle is in progress. These indicator dots (as shown in the illustration below) **DO NOT** necessarily mean that the outputs are functioning. They are only indicating that the function output **should be** active (on).

1. **L.E.D. DISPLAY INDICATOR NUMBER 1**



MAN3450

   a. For Optional Reversing Models:

      1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the forward mode (clockwise [CW] direction).

2. **L.E.D. DISPLAY INDICATOR NUMBER 2**

   a. For Optional Reversing Models:

      1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the reverse mode (counterclockwise [CCW] direction).

3. **L.E.D. DISPLAY INDICATOR NUMBER 3**

   a. Heat Circuit Indicator:

      1) This indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating circuit to be active (on).

4. L.E.D. DISPLAY INDICATOR NUMBER 4

a. On Indicator:

1) This indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle program is active, the indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time program.

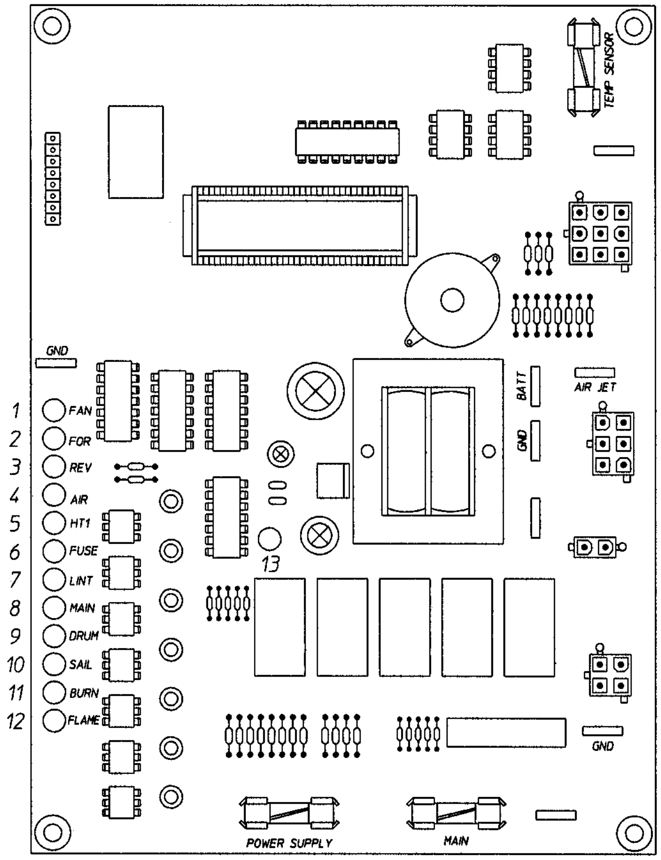
5. L.E.D. DISPLAY INDICATOR NUMBER 5

a. Air Jet Circuit - ***OPTIONAL***

1) This indicator dot is on at the end of the dryer cycle for approximately 60 seconds.

C. PHASE 6 OPL MICROPROCESSOR CONTROLLER (COMPUTER) RELAY OUTPUT L.E.D. (light emitting diode) INDICATORS

There are a series of five (5) L.E.D. indicators (ORANGE LIGHTS) located at the backside of the Phase 6 OPL microprocessor controller (computer). These are identified or labeled (from top to bottom in the illustration below as: FAN-BLOWER, FOR-FORWARD, REV-REVERSE, AIR-AIR-JET, HT1-HEAT OUTPUT. There are a series of seven (7) L.E.D. indicators (red lights) FUSE-MAIN FUSE, LINT-LINT DOOR, MAIN-MAIN DOOR, DRUM-TUMBLER HI-LIMIT, SAIL-SAIL SWITCH, BURN-BURNER HI LIMIT, FLAME-FLAME PROBE). The L.E.D. in the center of the board (red light) indicates power supplied to the Phase 6 OPL microprocessor controller (computer). These L.E.D.'s indicate the inputs and outputs of the Phase 6 OPL microprocessor (computer) as it monitors the safety circuits.



MAN3449

1. **"FAN" (BLOWER) Output L.E.D. Indicator**

    a. If the dryer is started and the blower motor is not operating, yet the Phase 6 OPL microprocessor controller (computer) display fan indicator dot and power supply input L.E.D. are on, but the fan output L.E.D. is off, then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

        1) If the motor is not operating. The fan indicator dot and output L.E.D. are also on, then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

2. **"FOR" (FORWARD) Output L.E.D. Indicator (for Optional Reversing Model ONLY)**

    a. If the dryer is started and the blower motor is operating, but the drive (tumbler/basket) motor is not, yet the Phase 6 OPL microprocessor controller (computer) display "FORWARD" indicator dot is on, the "FOR" (FORWARD) motor output L.E.D. is off; then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

        1) If the drive (tumbler and basket) motor is not operating and the forward indicator dot and output L.E.D. is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

3. **"REV" (REVERSE) Output L.E.D. Indicator (for Optional Reversing Models ONLY)**

    a. If the dryer is started and the blower motor is operating but the drive (tumbler and basket) motor is not, yet the Phase 6 OPL microprocessor controller (computer) displays "REVERSE" indicator dot is on but the "REV" (REVERSE) motor output L.E.D. is off; then the fault is of the Phase 6 OPL microprocessor controller (computer) itself.

        1) If the drive (tumbler and basket) motor is not operating and reverse indicator dot and output L.E.D. is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

4. **"AIR" (AIR JET) Output L.E.D. Indicator - *OPTIONAL***

    a. "AIR" is on with the display dot at the end of the dry cycle once the display reads "dONE," it is on for approximately 60 seconds and the output L.E.D. indicator and the display dot go out. If the air jet does not energize it is not the fault of the Phase 6 OPL microprocessor controller (computer). If the output L.E.D. or dot **DO NOT** go on it is the fault of the Phase 6 OPL microprocessor controller (computer).

5. **"HT1" (HEAT) Output L.E.D. Indicator**

    a. If the dryer is started and there is "No Heat" yet the Phase 6 OPL microprocessor controller (computer) display heat circuit indicator dot is on, but the "HT1" output L.E.D. indicator is off; then the fault is in the Phase 6 OPL microprocessor controller (computer) itself.

        1) If the dryer is started and there is "No Heat" yet both the Phase 6 OPL microprocessor controller (computer) display indicator dots and the "HT1" output L.E.D. indicator are on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

6. **"FUSE" (MAIN FUSE) Input L.E.D. Indicator**

   a. **Should be** on **ALL** the time (even if the dryer is not running). If the L.E.D. is not on; then the display will read "CHECK MAIN FUSE." If the main fuse is good then the fault is on the Phase 6 microprocessor controller (computer).

7. **"LINT" (LINT DOOR) Input L.E.D. Indicator**

   a. **Should be** on **ALL** the time (unless the lint door is opened then the "LINT" L.E.D. indicator will go out).

   b. If the dryer is active (running) and the lint door is opened the "LINT" L.E.D. indicator will go out and the display will read "LINT dOOR." The dryer will stop until the Lint Drawer has been closed, at which time the L.E.D. display will read "PRESS START." At this time, to resume the drying cycle press "ENTER/START" key.

8. **"MAIN" (MAIN DOOR) Input L.E.D. Indicator**

   a. **Should be** on **ALL** the time (unless the lint door is open or the main door is opened then the "MAIN" L.E.D. indicator will go out).

   b. If the dryer is active (running) and the main door is opened the "MAIN" L.E.D. indicator will go out and the display will read "MAIN dOOR." The dryer will stop until the main door has been closed, at which time the L.E.D. display will read "PRESS START." At this time, to resume the drying cycle press "ENTER/START" key.

9. **"DRUM" (TUMBLER [BASKET] HI-LIMIT) Input L.E.D. Indicator**

   a. **Should be** on at **ALL** times (unless the tumbler [basket] hi-limit switch opens prior during the cycle while the heat was on the display would read "dRUM SAFETY FAIL"). The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying "dRUM SAFETY FAIL" with an audio indication.

10. **"SAIL" (SAIL SWITCH) Input L.E.D. Indicator**

    a. This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is in the closed position prior to start, the "SAIL" output L.E.D. indicator will be off, the machine will not start and the display will read "SAIL SWITCH FAIL" along with an audio indication.

    b. If the sail switch opens during the cycle the "SAIL" output L.E.D. will go out and the display will read "NO AIRFLOW." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying "NO AIRFLOW" along with an audio indication.

11. **"BURN" (BURN HI-LIMIT) Input L.E.D. Indicator**

    a. This routine monitors the temperature of the burner. If the burner hi-limit opens during the cycle while the heat was on the "BURN" output L.E.D. indicator goes out and the display reads "bURNER SAFETY FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C) then the machine will shut down still displaying "bURNER SAFETY FAIL" with an audio indication.

12. "FLAME" (bURNER CONTROL FAIL) Input L.E.D. Indicator

a. This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the microprocessor determines the ignition control has failed. If this occurs when the cycle is active the "FLAME" output L.E.D. indicator will go out and the display will read "bURNER CONTROL FAIL." The machine will run with no heat for three (3) minutes or until the temp drops below 100° F (38° C). Then the machine will shut down still displaying "bURNER CONTROL FAIL" with an audio indication.

13. "POWER SUPPLY" Input L.E.D. Indicator

a. **Should be** on at ALL times (even if the dryer is not running). The power supply L.E.D. (light emitting diode) output indicator will not be on if the power supply fuse to the Phase 6 OPL microprocessor is not present. If the power supply fuse is faulty the L.E.D. output will be off and there will be no display or keyboard (touchpad) function. The "FUSE," "LINT," and "DRUM" output L.E.D. indicators will remain on.

D. L.E.D. CODES

1. Display Codes

A	SLOPE FACTOR
ALL REV	ALWAYS REVERSING
ANTI WRINKL dELAY TIME	ANTI-WRINKLE DELAY TIME
ANTI WRINKL GUARd ACTIVE	ANTI-WRINKLE PROGRAM ACTIVE
ANTI WRINKL GUARd ON TIME	ANTI-WRINKLE GUARD ON TIME
AUTO CYCLE	AUTOMATIC MODE
b	HEAT LOSS (OFF SET) FACTOR
bURNER CONTROL FAIL	GAS ONLY POWER (24 VAC) IS NOT EVIDENT AT GAS VALVE
bURNER FLAME FAIL	NO BURNER FLAME SENSED
bURNER SAFETY FAIL	GAS/ELECTRIC ONLY BURNER/OVEN OPEN HI-LIMIT CIRCUIT
bUZZ	BUZZER (TONE)
bUZZ TIME	BUZ TIME
CEL	DEGREE IN CELSIUS
CHECK MAIN FUSE	MAIN FUSE FAILURE
CLEAN LINT	PROMPT TO CLEAN LINT SCREEN, DRYER CYCLE LOCKOUT
COOL	COOL DOWN CYCLE IN PROGRESS
COOL TIME_M	COOL DOWN TIME
COOL TEMP_	COOL DOWN TEMPERATURE
CYCLEA	PREPROGRAMMED CYCLE A
CYCLEb	PREPROGRAMMED CYCLE B
CYCLEC	PREPROGRAMMED CYCLE C
CYCLED	PREPROGRAMMED CYCLE D
CYCLEE	PREPROGRAMMED CYCLE E
CYCLEF	PREPROGRAMMED CYCLE F
dONE	DRYING or COOLING CYCLE COMPLETE or DRYER IN ANTI-WRINKLE MODE
dRYING	DRYING CYCLE IN PROGRESS
dRY LEVEL_	DRYNESS LEVEL (PERCENTAGE OF EXTRACTION) (NUMERICAL VALUE)
dRY TEMP F_	DRYING TEMPERATURE
dRY TIME_M	LENGTH OF DRYING CYCLE
dRUM SAFETY FAIL	TUMBLER HI-LIMIT CIRCUIT IS OPEN
ELAPSE TIME_MIN	CYCLE DISPLAY TIME
ELECTRIC	SPECIFIC HEAT TYPE or DRYER ELECTRICALLY HEATED
F	FABRIC TEMPERATURE
FAR	DEGREE IN FAHRENHEIT
FLASH	FLASH DISPLAY ACTIVE
GAS	SPECIFIC HEAT TYPE OF DRYER GAS HEATED
HOT	INDICATES AN OVERHEAT CONDITION
LINT dOOR	LINT DRAWER/DOOR CIRCUIT IS OPEN OR FAULT IN THE A.C. SWITCH CIRCUIT
LINT COUNT	DRYING CYCLES RANGE FROM 1-10 CYCLES BEFORE CLEAN LINT DISPLAY
_M REMAIN	CYCLE DISPLAY TIME
MAIN dOOR	DOOR CIRCUIT IS OPEN or FAULT IN THE A.C. DOOR SWITCH CIRCUIT
MANUAL CYCLE	MANUAL MODE
MAX ANTI WRINKL GUARd	MAXIMUM GUARD TIME
NFLASH	FLASH DISPLAY NOT ACTIVE
NoAIRFLOW	SAIL SWITCH OPEN
NoANTI WRINKL GUARd	ANTI-WRINKLE PROGRAM IS NOT ACTIVE
NoBUZZ	NO BUZZER (TONE)
NoHEAT	GAS ONLY IGNITION ATTEMPT FAILURE
NoREV	NO REVERSE
No ROTATE SENSOR	NO ROTATIONAL SENSOR SELECTED
PROGRAM	PROGRAM MODE
REAdY	NO CYCLE IN PROGRESS
ROTATE SENSOR ACTIVE	ROTATIONAL SENSOR SELECTED
ROTATE SENSOR FAIL	ROTATIONAL SENSOR CIRCUIT FAILURE
_RPM	MONITORS TUMBLER RPM WITH ROTATIONAL SENSOR CIRCUIT ACTIVE
SAIL SWITCH FAIL	GAS/ELECTRIC ONLY ATTEMPT MADE TO START DRYER WITH SAIL SWITCH DISABLED IN CLOSED POSITION
SELREV	SELECT REVERSE
SPIN TIME	SPIN TIME
START GUARd	START ANTI-WRINKLE GUARD CYCLE
STEAM	SPECIFIC HEAT TYPE or DRYER STEAM HEATED
STOP TIME	STOP TIME
TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE	FAULT IN M.P. HEAT SENSING CIRCUIT

2. Fault Codes

bURNER CONTROL FAIL
- GAS MODELS ONLY POWER (24 VAC) IS NOT EVIDENT AT GAS VALVE

bURNER FLAME FAIL
- The Phase 6 Microprocessor Controller (Computer) DOES NOT SENSE FLAME VERIFICATION (GAS MODEL ONLY)

bURNER SAFETY FAIL
- GAS/ELECTRIC ONLY BURNER/OVEN OPEN HI-LIMIT CIRCUIT

dRUM SAFETY FAIL
- Fault in the TUMBLER (BASKET) HI-LIMIT CIRCUIT

HOT
- Indicates an OVERHEAT CONDITION

LINT dOOR
- When the LINT DOOR OR DRAWER is open or there is a **fault** in the LINT DOOR/DRAWER CIRCUIT

MAIN dOOR
- When the MAIN DOOR is open or there is a **fault** in the DOOR CIRCUIT

No AIRFLOW
- **Fault** in the SAIL SWITCH CIRCUIT (GAS/ELECTRIC MODELS ONLY)

No HEAT
- GAS ONLY IGNITION ATTEMPT FAILURE

ROTATE SENSOR FAIL
- **Fault** in the ROTATION SENSOR CIRCUIT

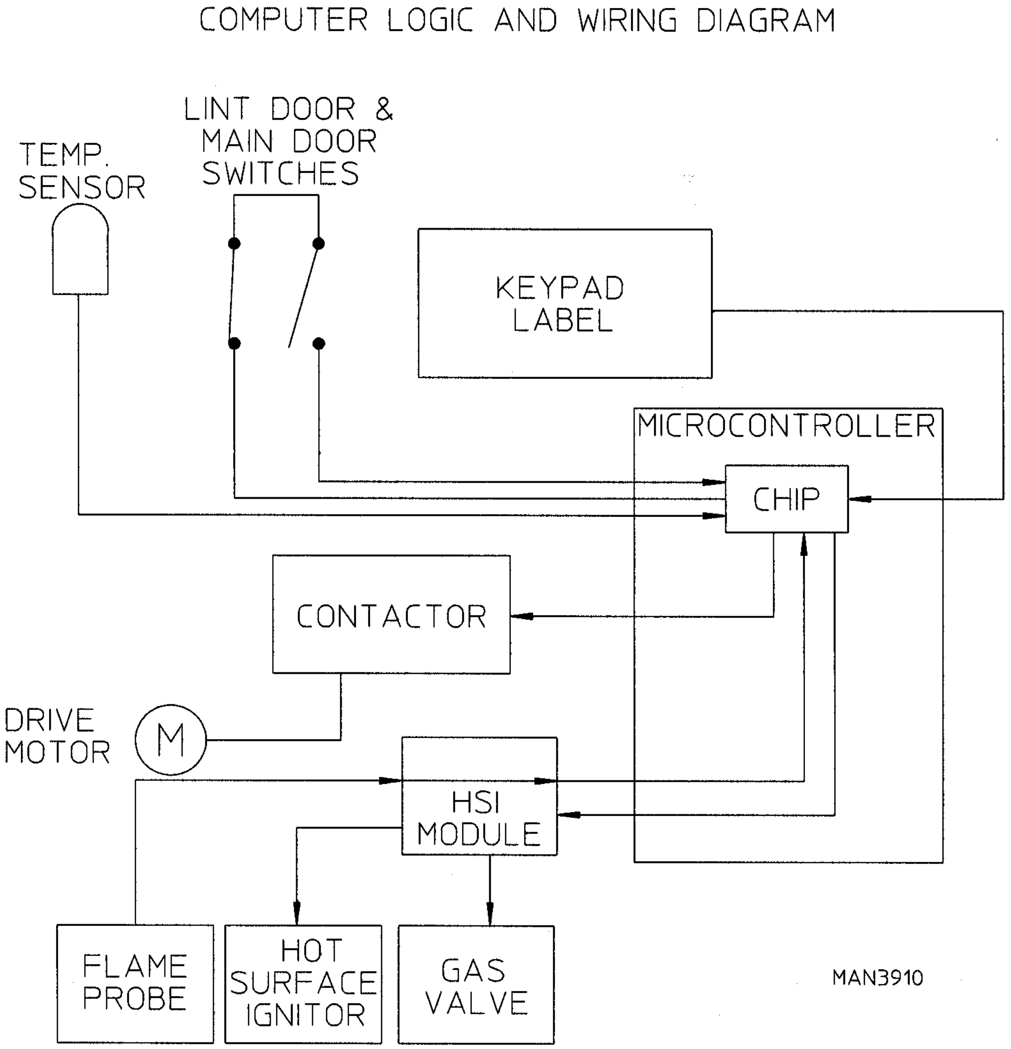
SAIL SWITCH FAIL
- **Fault** in the SAIL SWITCH CIRCUIT (GAS/ELECTRIC MODELS ONLY)

TEMP SENSOR CHECK TEMP SENSOR FUSE
- **Fault** in the MICROPROCESSOR TEMPERATURE SENSOR CIRCUIT

E. COMPUTER LOGIC and WIRING DIAGRAM

1. Operator enters desired selections.

2. Information entered is sent to the microprocessor (computer) via the keyboard (touchpad).

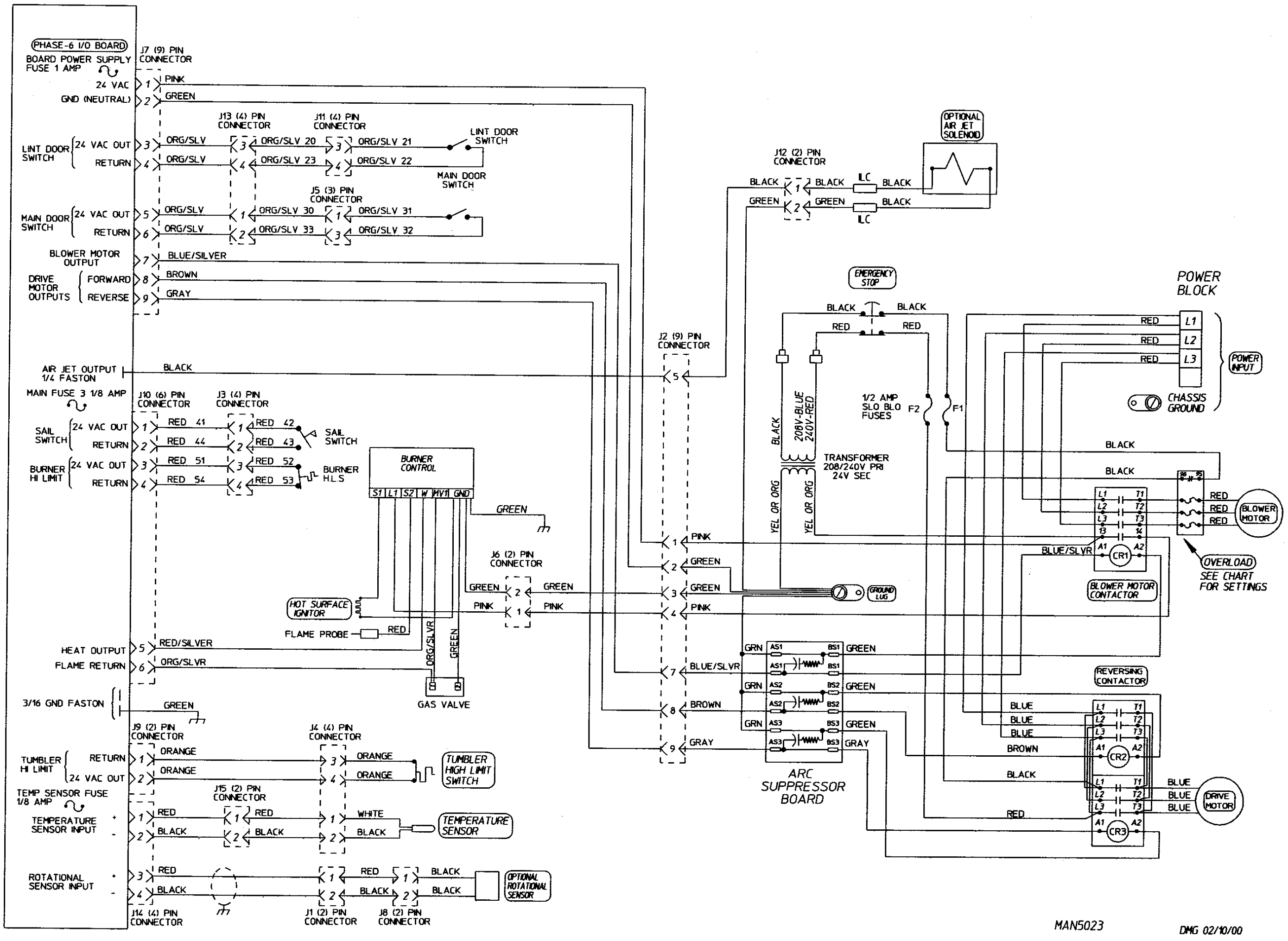

COMPUTER LOGIC AND WIRING DIAGRAM
LINT DOOR & MAIN DOOR SWITCHES
TEMP. SENSOR
KEYPAD LABEL
MICROCONTROLLER
CHIP
CONTACTOR
DRIVE MOTOR
M
HSI MODULE
FLAME PROBE
HOT SURFACE IGNITOR
GAS VALVE
MAN3910

3. The input information is sorted, processed, and executed by the microcomputer chip.

4. The microcomputer output signal activates the contactors and HSI (Hot Surface Ignition) module which control machine functions.

NOTE: When contacting **ADC** with electrical questions, please have on hand the correct wiring diagram number for your particular machine. This number is located on the top right-hand corner of the diagram. It is a six (6) digit number followed by a letter to distinguish the revision dates (refer to illustration).

The wiring diagrams used in troubleshooting are specifically for dryers manufactured at the time of publishing. Your particular model may vary slightly depending on the date of manufacturing and options available. The correct wiring diagram and number is either taped to the rear of the control door or each dryer, or placed in the control box. If your particular diagram is lost or unreadable, call **ADC** with the serial number of the dryer. **ADC** will be more than happy to send you a diagram by fax or mail.


PHASE-6 I/O BOARD
BOARD POWER SUPPLY FUSE 1 AMP
24 VAC
GND (NEUTRAL)
J7 (9) PIN CONNECTOR
PINK
GREEN
LINT DOOR SWITCH
24 VAC OUT
RETURN
ORG/SLV
J13 (4) PIN CONNECTOR
ORG/SLV 20
ORG/SLV 23
J11 (4) PIN CONNECTOR
ORG/SLV 21
ORG/SLV 22
LINT DOOR SWITCH
MAIN DOOR SWITCH
MAIN DOOR SWITCH
J5 (3) PIN CONNECTOR
ORG/SLV 30
ORG/SLV 33
ORG/SLV 31
ORG/SLV 32
BLOWER MOTOR OUTPUT
BLUE/SILVER
DRIVE MOTOR OUTPUTS
FORWARD
REVERSE
BROWN
GRAY
AIR JET OUTPUT 1/4 FASTON
BLACK
MAIN FUSE 3 1/8 AMP
J10 (6) PIN CONNECTOR
J3 (4) PIN CONNECTOR
SAIL SWITCH
RED 41
RED 42
RED 44
RED 43
SAIL SWITCH
BURNER HI LIMIT
RED 51
RED 52
RED 54
RED 53
BURNER H.L.S
BURNER CONTROL
S1
L1
S2
W
MV1
GND
GREEN
J6 (2) PIN CONNECTOR
GREEN
PINK
HOT SURFACE IGNITOR
FLAME PROBE
RED
ORG/SLVR
GREEN
HEAT OUTPUT
FLAME RETURN
RED/SILVER
ORG/SLVR
GAS VALVE
3/16 GND FASTON
GREEN
J9 (2) PIN CONNECTOR
J4 (4) PIN CONNECTOR
TUMBLER HI LIMIT
RETURN
24 VAC OUT
ORANGE
TUMBLER HIGH LIMIT SWITCH
TEMP SENSOR FUSE 1/8 AMP
J15 (2) PIN CONNECTOR
TEMPERATURE SENSOR INPUT
+
-
RED
BLACK
WHITE
TEMPERATURE SENSOR
ROTATIONAL SENSOR INPUT
RED
BLACK
OPTIONAL ROTATIONAL SENSOR
J14 (4) PIN CONNECTOR
J1 (2) PIN CONNECTOR
J8 (2) PIN CONNECTOR
OPTIONAL AIR JET SOLENOID
J12 (2) PIN CONNECTOR
BLACK
GREEN
ILC
EMERGENCY STOP
BLACK
RED
J2 (9) PIN CONNECTOR
PINK
GREEN
BLUE/SLVR
BROWN
GRAY
BLACK
208V-BLUE
240V-RED
1/2 AMP SLO BLO FUSES
F2
F1
TRANSFORMER 208/240V PRI 24V SEC
YEL OR ORG
GROUND LUG
POWER BLOCK
L1
L2
L3
RED
POWER INPUT
CHASSIS GROUND
BLACK
96
95
L1 T1
L2 T2
L3 T3
13 14
A1 A2
CR1
BLUE/SLVR
RED
BLOWER MOTOR
OVERLOAD
SEE CHART FOR SETTINGS
BLOWER MOTOR CONTACTOR
GRN
AS1
BS1
AS2
BS2
AS3
BS3
GREEN
GRAY
ARC SUPPRESSOR BOARD
REVERSING CONTACTOR
BLUE
BROWN
BLACK
RED
CR2
CR3
DRIVE MOTOR
MAN5023
DMG 02/10/00

1. No Display Condition

a. Check position of "EMERGENCY STOP" (E-Stop) to verify it is in operating position (pull or twist for operating position).

b. Check fuse one (1) or two (2) and if either are blown, replace.

c. Take voltage reading across the microprocessor (J7) 9-pin connector pins 1 and 2. If no voltage is present at pins 1 and 2, double check the secondary (24 VAC) side of transformer at the blower motor contactor number 13 to ground if no voltage is present check primary voltage to transformer.

d. Check voltage across fuses 1 and 2 to ground. If voltage is present, check "EMERGENCY STOP" (E-Stop) "red" and "black" wire to ground. If voltage is present, check voltage across 95 and 96 to ground of the drive motor overload. If voltage is present, check 95 and 96 to ground of the blower motor overload. If voltage is present and transformer terminations are good, then the transformer is faulty. Refer to the schematic supplied with the dryer to assist in the troubleshooting of the dryer.

NOTE: In this next section ALL voltage checks ***must be*** done in the operating mode with the appropriate microprocessor dot on. Also appropriate L.E.D. (light emitting diode) output light on.

NOTE: In this next section when checking for voltage you are looking for 25 AC volts unless otherwise specified.

2. Drive motor reverses but does not forward, blower motor runs

a. If computer dot (first dot on the left) does not come on replace the computer.

b. Check for voltage across the coil of the forward contactor located in the reversing panel box. The contactor according to your diagram is marked CR2. The coil markings A1 and A2.

If voltage is present, replace reversing contactor.

If voltage is not present, there is a faulty wire or termination between BS2 and contactor coil (CR2).

c. If there is voltage across the two (2) AS2 terminals and no voltage across the two (2) BS2 terminals, replace the arc suppressor (A.S.) board.

If there is no voltage across the two (2) AS2 terminals on the arc suppressor (A.S.) board, the problem is a faulty wire or termination between the AS2 board and the J7 9-pin computer connector no. 8 or faulty computer.

3. Drive motor works in forward mode but does not reverse, blower motor runs

a. If computer dot (second one from left) does not come on, check program to see if set for reverse.

b. If set for reverse, replace computer.

c. Check for voltage across the coil of the reversing contactor located in the rear panel box. The contactor according to your diagram is CR3, also the markings on the coil are A1 and A2.

If there is voltage, replace the coil or the complete contactor.

If there is no voltage, check for voltage across the two (2) BS3 terminals on the arc suppressor (A.S.) board.

If there is voltage across the two (2) BS3 terminals and no voltage across the coil of the reversing contactor (A1 and A2), the problem is faulty wires or terminations between BS1 and the contactor coil.

d. If there is no voltage between the two (2) BS3 terminals on the arc suppressor (A.S.) board, check for voltage across the two (2) AS3 terminals on the board.

If there is voltage across the two (2) AS3 terminals and no voltage across the two (2) BS3 terminals, replace the arc suppressor (A.S.) board.

If there is no voltage across the two (2) AS3 terminals, the problem is faulty wires or terminations between the arc suppressor (A.S.) board and the computer 9-pin connector no. 9 or a faulty computer.

4. Blower motor does not operate, drive motor runs

a. Check for voltage across terminals A1 and A2 of the impellor contactor. This is the single contactor in the reversing control box.

If voltage is present check for voltage across the blower motor. If there is voltage at the blower motor replace the motor.

If there is no voltage at the blower motor, the problem is faulty wires or terminations between the contactor and the motor.

b. If there is no voltage present at A1 and A2 of the contactor, check for voltage across the two (2) BS1 terminals of the arc suppressor (A.S.) board.

If there is voltage present at the two (2) BS1 terminals, the problem is faulty wires or terminations between the two (2) BS1 terminals and the coil (A1 and A2) terminals.

If there is no voltage across the two (2) BS1 terminals, check for voltage across the two (2) AS1 terminals.

If there is voltage across the two (2) AS1 terminals and there is no voltage between the two (2) BS1 terminals, replace the arc suppressor (A.S.) board.

c. If there is no voltage across the two (2) AS1 terminals, the problem is faulty wires or terminations between the two (2) AS1 terminals and the computer board J7 9-pin connector no. 7 or faulty computer.

5. Lint Door Condition

NOTE: Make sure main door and lint door are closed. Also, if checking either switch, the plunger ***must be*** depressed.

a. Check L.E.D. (light emitting diode) input light "LINT" on the component side of the computer. If the light is on, replace the computer.

b. Check voltage (24 VAC) from J7 9-pin connector no. 3 to ground. If voltage is present check no. 4 to ground if voltage is present replace board.

c. If no voltage is present at J7 9-pin connector no. 4 to ground, but voltage is present at no. 3 to ground. The problem is a faulty switch, wires or termination between J7 to J8 and J8 to the lint switch no. 20 and 21.

d. If no voltage is present at J7 9-pin connector no. 3 to ground, then voltage **should not be** present at no. 5 to ground. Replace the board.

6. Main Door Condition

NOTE: Make sure main door and lint door are closed. Also, if checking either switch, the plunger ***must be*** depressed.

a. Check L.E.D. (light emitting diode) input light "MAIN" on the component side of the computer. If the light is on, replace the computer.

b. Check voltage (24 VAC) from J7 9-pin connector no. 5 to ground. If voltage is present, check no. 6 to ground. If voltage is present, replace board.

c. If no voltage is present at J7 9-pin connector no. 6 to ground, but voltage is present at no. 5 to ground. The problem is a faulty switch, faulty wires or terminations J7 to J8. J8 to J5 and J5 to main door switch no. 31 and no. 32.

7. "No Heat" drive and blower motors run, display reads normal (gas models).

a. Check L.E.D. (light emitting diode) input light "HT1" on the component side of the computer. If the light is on replace the board.

b. If the L.E.D. (light emitting diode) input light "HT1" on the component side of the computer is on and there is no voltage to the HSI (Hot Surface Ignition) module "w" the display will read "BURNER CONTROL FAIL." The problem is faulty wires or terminations between microprocessor and HSI (Hot Surface Ignition) module.

c. If voltage is present on the HSI (Hot Surface Ignition) module "w" to ground. Check voltage at the gas valve if voltage is present across the two (2) "yellow" wires at the gas valve and the gas supply is on then the fault is that of the gas valve.

8. Microprocessor (Computer)

a. Replace the temperature sensor underneath the tumbler (basket) on a bracket (the bullet shaped device).

b. If it still reads "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE," unplug J3 4-pin connector from the temperature sensor bracket. Also, unplug the microprocessor J14 4-pin connector from the computer board. Take a continuity reading from J14 no. 1 to J3 no. 1, then from J14 no. 2 to J3 no. 2.

If there is no continuity, check for break in wire, a short to the ground, loose terminations, or even replace the wire.

If there is continuity, computer board is faulty.

American Dryer Corp.

IMPORTANT

MANUAL RESET HI-LIMIT INSTRUCTIONS

FOR PHASE 6 MODELS

This dryer was manufactured with a manual reset burner hi-limit and tumbler (basket)/lint chamber hi-limit thermostat which is monitored by the Phase 6 computer. If either manual reset thermostat is open prior to start of the drying cycle, the dryer will start momentarily and then shut down, the Phase 6 computer will display an error code with an audio indication. If the tumbler (basket)/lint chamber hi-limit thermostat is open, the display will read “dRUM SAFETY FAIL.” If the burner hi-limit thermostat is open, the display will read “bURNER SAFETY FAIL.”

If either manual reset hi-limit thermostat opens during a drying cycle, the display will show the applicable error code described above along with an audio indication. If the drum temperature is above 100° F (38° C), the dryer will continue to run with no heat for three (3) minutes or until the drum temperature has flattened below 100° F (38° C). The clear/stop button on the Phase 6 keyboard (touchpad) **must be** pressed to clear the error condition. The open manual reset hi-limit thermostat **must be** reset “manually” prior to the start of the next cycle.

This hi-temperature condition may be caused due to a restricted exhaust, poor airflow, or improper burner operation.

The location of the burner hi-limit is on the right side of the burner box and the tumbler (basket) hi-limit is located in the lint chamber area.

WARNING: Discontinue power to dryer before attempting to reset hi-limit.

IMPORTANT

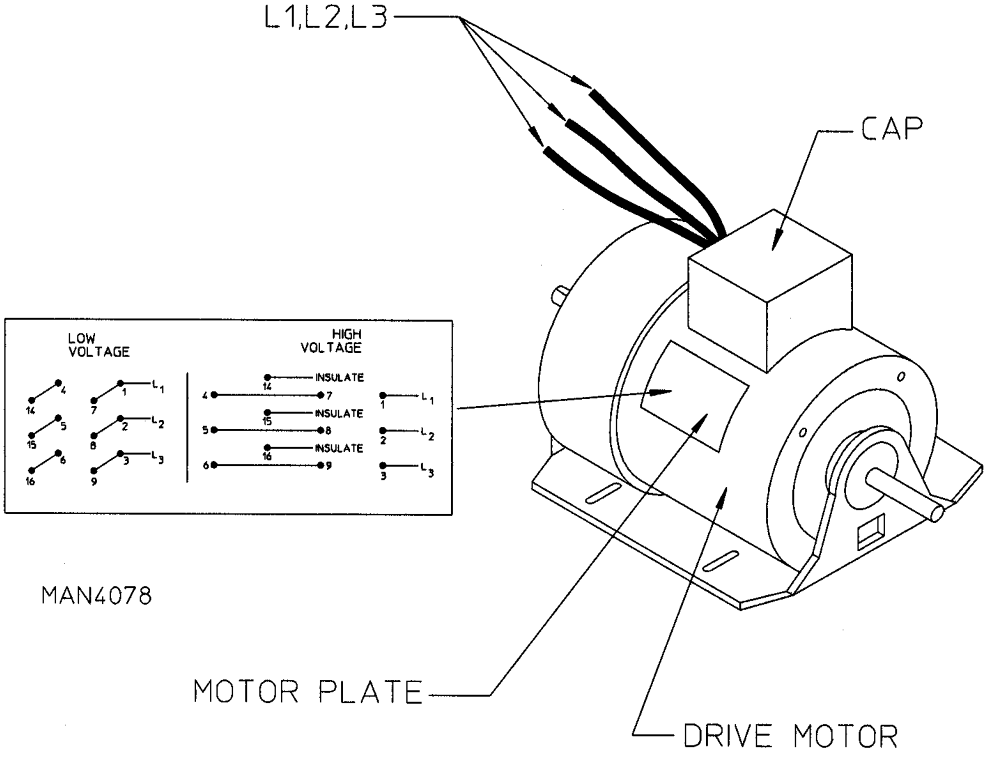
This dryer is equipped with a burner hi-limit and tumbler/lint chamber hi-limit thermostat which **must be** reset manually.

WARNING: Discontinue power to dryer before attempting to reset hi-limit.

SECTION VIII
TECHNICAL INFORMATION

The following section contains various technical information important to the service person in servicing and maintaining the dryer.

A. MOTOR PLATE (HIGH and LOW VOLTAGE)



The motor plate is located on the side of the drive motor (refer to illustration) and contains a graphical representation of the motor wiring for both low and high voltage ratings.

Removing the cap reveals the wiring to the motor. On each wire there is a number which corresponds to the numbers on the motor plate. Depending on whether the dryer is operating on low or high voltage, the wiring should match the motor plate as follows:

The dots and lines represent connections (refer to illustration).

For example:

On low voltage - wire no. 14 is connected to wire no. 4

- wire no. 1 is connected to wire no. 7, which in turn are both connected to L1

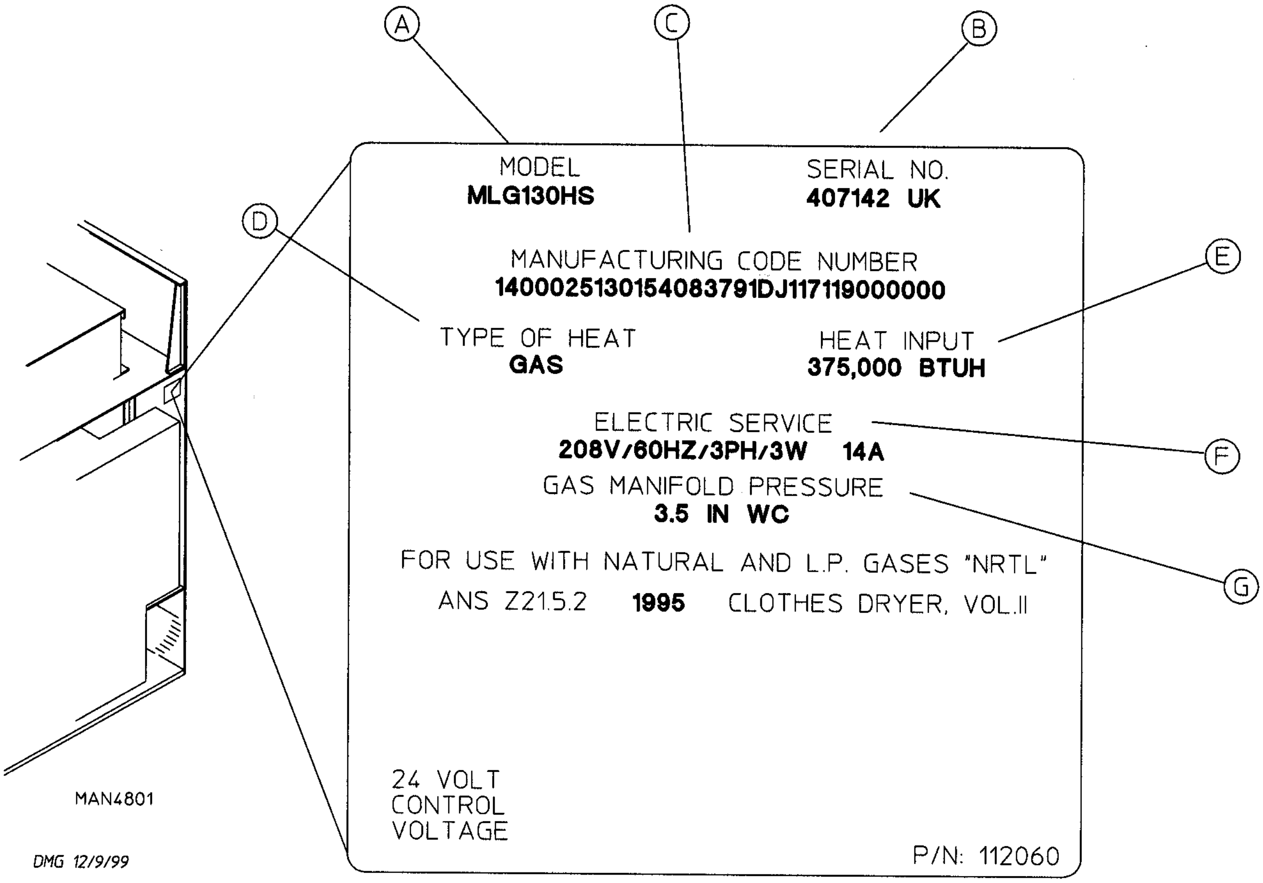
On high voltage - wire no. 14 is insulated or capped

- wire no. 4 is connected to wire no. 7

- wire no. 1 is connected to L1

B. DATA LABEL

Contacting **American Dryer Corporation (ADC)**


A
C
B
D
E
F
G
MODEL
MLG130HS
SERIAL NO.
407142 UK
MANUFACTURING CODE NUMBER
1400025130154083791DJ117119000000
TYPE OF HEAT
GAS
HEAT INPUT
375,000 BTUH
ELECTRIC SERVICE
208V/60HZ/3PH/3W 14A
GAS MANIFOLD PRESSURE
3.5 IN WC
FOR USE WITH NATURAL AND L.P. GASES "NRTL"
ANS Z21.5.2 1995 CLOTHES DRYER, VOL.II
24 VOLT CONTROL VOLTAGE
P/N: 112060
MAN4801
DMG 12/9/99

When contacting **ADC**, certain information is required to ensure proper service and parts information. This information is on the data label, located on the top right corner of the dryer, viewed from the rear (refer to illustration). When contacting **ADC**, please have the model number and serial number readily accessible.

Information on the Data Label

a. Model number - The model number is an **ADC** number which describes the size of the dryer and the type of heat (gas or steam).

b. Serial number - The serial number allows **ADC** to gather information on your particular dryer.

c. Manufacturing code number - The manufacturing code number is a number issued by **ADC** which describes **ALL** possible options on your particular model.

d. Type of heat - Describes the type of heat; gas (natural or L.P. [liquid propane]), steam or electric.

e. Heat input - (For gas dryers) describes the heat input in British Thermal Units.

f. Electric service - Describes the electric service for your particular models.

g. Gas manifold pressure - Describes the manifold pressure as taken at the gas valve pressure tap (refer to "Using a Manometer").

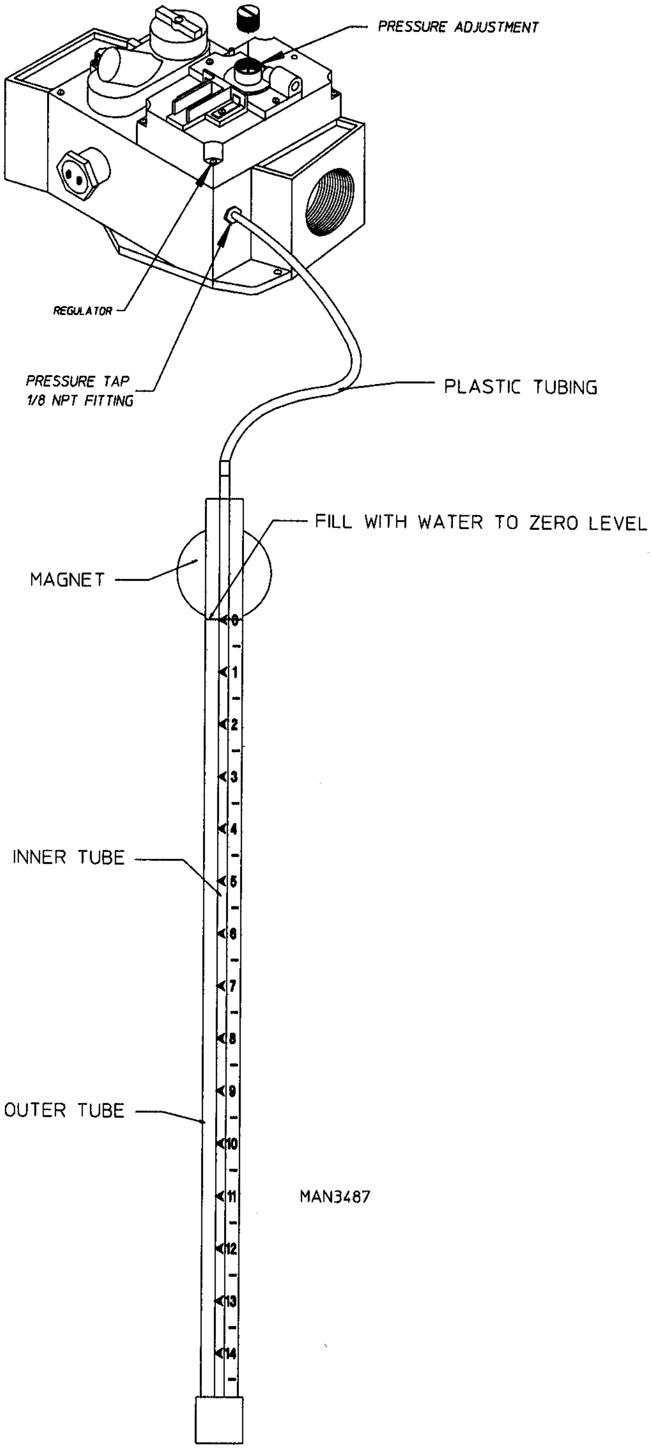
C. HOW TO USE A MANOMETER

1. With dryer in nonoperating mode, remove plug on the gas valve pressure tap.
2. Attach plastic tubing to pressure tap. Fitting is supplied with manometer (refer to illustration).
3. Attach manometer to dryer using magnet.

NOTE: Place manometer in a position so that readings can be taken at eye level.

4. Fill manometer with water, as shown in illustration to the zero level.
5. Start dryer. With burner on, take a reading.
   a. Read water level at the inner tube. Readings **should be** taken at eye level.
   b. Correct readings **should be**:

      NATURAL GAS: 3.5 inches W.C. (8.7 mb).
      L.P. GAS: 10.5 inches W.C. (26.1 mb).
6. If water column pressure is incorrect refer to "TO ADJUST GAS PRESSURE."
7. Reverse procedure for removing manometer.


PRESSURE ADJUSTMENT
REGULATOR
PRESSURE TAP
1/8 NPT FITTING
PLASTIC TUBING
FILL WITH WATER TO ZERO LEVEL
MAGNET
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
INNER TUBE
OUTER TUBE
MAN3487

D. TOOL LIST

Straight Head Screwdriver

Phillips Head Screwdriver

Sensor Pin and Socket Tool (P/N 122801)

Pliers

1/4” Nut Driver

3/8” Open End Wrench

5/8” Open End Wrench

3/8” Socket Wrench

1/2” Socket or Open End Wrench

1/4” Open End Wrench

5/16” Socket or Open Wrench

1/2” Socket Wrench

7/16” Socket or Open End Wrench

5/16” Nut Driver

12” Pipe Wrench (2)

1/8” “T” Shaped or “L” Shaped Allen Wrench

3/16” “T” Shaped or “L” Shaped Allen Wrench

Wire Cutters

1/2” Allen Wrench

3/8” Allen Wrench

Channel Locks

Manometer (**ADC** P/N 122804)

MP Pin Extraction Tool (**ADC** P/N 122800)

ML-145/170 Table of Content

SECTION I

IMPORTANT INFORMATION D3
- A. Safety Precautions D3

SECTION II

ROUTINE MAINTENANCE D5
- A. Cleaning D5
- B. Adjustments D6
- C. Lubrication D6

SECTION III

INSTALLATION REQUIREMENTS D7
- A. Enclosure, Air Supply, and Exhaust Requirements D7
- B. Electrical and Gas Requirements D7
- C. Operational Service Check Procedure D8

SECTION IV

DESCRIPTION OF PARTS D10
- A. Control Panel (Microprocessor) D10
- B. Control Panel (Non-Microprocessor) D10
- C. Control Box D10
- D. HSI (Hot Surface Ignition) Module (Gas Models Only) D11
- E. Gas Burner Assembly D11
- F. Drive Motor D11
- G Blower Motor and Impellor (Gas and Steam) D12
- H. Idler Assembly D12
- I. Tumbler (Basket) Bearing and Pulley Arrangement D12
- J. Tumbler (Basket) D13
- K. Main Door Switch D13
- L. Sail Switch (Gas Models Only) D13
- M. Hi-Limit (Gas Models Only) D14
- N. Automatic Reset Thermostat D14
- O. Lint Drawer D14
- P. Lint Drawer Switch D15
- Q. Steam Damper System D15
- R. Compressed Air Requirements D15
- S. Temperature Sensor Bracket (Non-Computer) D15

SECTION V

SERVICING D16
Introduction D16
A. Computer Controls D16
B. Ignition Controls D18
C. Thermostats D21
D. Sail Switch Assembly (Gas Models Only) D22
E. Front Panel and Main Door Assemblies D23
F. Pulleys D25
G. Tumbler (Basket) Assembly D27
H. Bearings D29
I. V-Belts D31
J. Motors D32
K. Impellor D33
L. Lint Drawer Assembly D33

SECTION VI

TROUBLESHOOTING D35

SECTION VII

ELECTRICAL TROUBLESHOOTING D41

SECTION VIII

PHASE 6 OPL SYSTEM DIAGNOSTICS D42
A. Diagnostic (L.E.D. [light emitting diode] Display) Failure Codes D42
B. L.E.D. (light emitting diode) Display Indicators D44
C. Phase 6 OPL Microprocessor Controller (Computer) Relay Output L.E.D. (light emitting diode) Indicators D45

SECTION IX

L.E.D. DISPLAY/CODES D49
A. L.E.D. Display Operating Status D49
B. Phase 6 OPL Microprocessor L.E.D. Displays D50
C. L.E.D. Codes D51
D. Computer Logic and Wiring Diagram D53

SECTION X

TECHNICAL INFORMATION D58
A. Motor Plate (High and Low Voltage) D58
B. Data Label D59
C. Use a Manometer D60
D. ML-170 Tool List D61

SECTION I

IMPORTANT INFORMATION

A. SAFETY PRECAUTIONS

WARNING: For your safety, the information in this manual ***must be*** followed to minimize the risk of fire or explosion or to prevent property damage, personal injury, or loss of life.

WARNING: The dryer *must never be* operated with any of the back guards, outer tops, or service panels removed. PERSONAL INJURY or FIRE COULD RESULT.

1. **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

2. Purchaser/user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions **should be** posted in a prominent location.

3. WHAT TO DO IF YOU SMELL GAS...

   a. **DO NOT** try to light any appliance.

   b. **DO NOT** touch any electrical switch.

   c. **DO NOT** use any phone in your building.

   d. Clear the room, building, or area of **ALL** occupants.

   e. Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

   f. If you **cannot** reach your gas supplier, call the fire department.

4. Installation and service **must be** performed by a qualified installer, service agency, or gas supplier.

5. Dryer(s) **must be** exhausted to the outdoors.

6. Although **ADC** produces a very versatile machine, there are some articles that, due to fabric composition or cleaning method, **should not be** dried in it.

WARNING: Dry only water-washed fabrics. ***DO NOT*** dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "**ALL** purpose" cleaner.
EXPLOSION COULD RESULT.

WARNING: ***DO NOT*** dry rags or articles coated or contaminated with gasoline, kerosene, oil, paint, wax.
EXPLOSION COULD RESULT.

WARNING: ***DO NOT*** dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

WARNING: ***DO NOT*** use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubber materials. Drying in a heated tumbler (basket) may damage plastics or rubber and also may be a fire hazard.

7. A program **should be** established for the inspection and cleaning of lint in the heating unit area, exhaust duct work, and inside the dryer. The frequency of inspection and cleaning can best be determined from experience at each location.

WARNING: The collection of lint in the burner area and exhaust duct work can create a potential fire hazard.

8. For personal safety, the dryer **must be** electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA NO. 70-LATEST EDITION or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION.

NOTE: Failure to do so will VOID THE WARRANTY.

9. **UNDER NO CIRCUMSTANCES** should the dryer door switches, lint door switch, heat safety circuit ever be disabled.

WARNING: PERSONAL INJURY or FIRE COULD RESULT.

10. This dryer is not to be used in the presence of dry cleaning solvents or fumes.

11. Remove articles from the dryer as soon as the drying cycle has been completed.

WARNING: Articles left in the dryer after the drying and cooling cycles have been completed can create a fire hazard.

12. **DO NOT** operate steam dryers with more than 125 PSI (8.61 bars) steam pressure. Excessive steam pressure can damage steam coil and/or harm personnel.

13. Replace leaking flexible hoses or other steam fixtures immediately. **DO NOT** operate the dryer with leaking flexible hoses. **PERSONAL INJURY MAY RESULT.**

14. **READ and FOLLOW ALL CAUTION and DIRECTION LABELS ATTACHED TO THE DRYER.**

WARNING: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

SECTION II

ROUTINE MAINTENANCE

A. CLEANING

A program and/or schedule **should be** established for periodic inspection, cleaning, and removal of lint from various areas of the dryer, as well as throughout the duct work system. The frequency of cleaning can best be determined from experience at each location. Maximum operating efficiency is dependent upon proper air circulation. The accumulation of lint can restrict this airflow. If the guidelines in this section are met, an **ADC** dryer will provide many years of efficient, trouble free, and – most importantly – safe operation.

WARNING: LINT FROM MOST FABRICS IS HIGHLY COMBUSTIBLE. THE ACCUMULATION OF LINT CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: KEEP DRYER AREA CLEAR and FREE FROM COMBUSTIBLE MATERIALS, GASOLINE and OTHER FLAMMABLE VAPORS and LIQUIDS.

NOTE: Suggested time intervals shown for average usage which is considered six (6) to eight (8) operational (running) hours per day.

Clean lint drawer and screen every third or fourth load.

NOTE: Frequency can best be determined at each location.

DAILY
(beginning) of each work shift.

Clean lint from the drawer and screen. Inspect lint screen and replace if torn.

WEEKLY

Clean lint accumulation from lint chamber, thermostat, and microprocessor temperature sensor (sensor bracket) area.

WARNING: To avoid the hazard of electrical shock, discontinue electrical supply to dryer.

STEAM DRYERS

Clean steam coil fins using compressed air and a vacuum cleaner with brush attachment.

NOTE: When cleaning steam coil fins, be careful not to bend the fins. If fins are bent, straighten by using a fin comb which is available from local air conditioning supply houses.

90 DAYS

Remove lint from tumbler (basket), drive motors, and surrounding areas. Remove lint from gas valve burner area with a dusting brush or vacuum cleaner attachment.

NOTE: To prevent damage, avoid cleaning and/or touching ignitor/flame-probe assembly.

Remove lint accumulation from inside control box and at rear area behind control box.

6 MONTHS

Inspect and remove lint accumulation in customer furnished exhaust duct work system and from dryer's internal exhaust ducting.

WARNING: THE ACCUMULATION OF LINT IN THE EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: *DO NOT* OBSTRUCT THE FLOW OF COMBUSTION and VENTILATION AIR. CHECK CUSTOMER FURNISHED BACK DRAFT DAMPER IN EXHAUST DUCT WORK. INSPECT and REMOVE ANY LINT ACCUMULATION WHICH CAN CAUSE DAMPER TO BIND or STICK.

NOTE: A back draft damper that is sticking partially closed can result in slow drying and shut down of the heat circuit safety switches or thermostats.

NOTE: When cleaning dryer cabinet(s), avoid using harsh abrasives. A product intended for the cleaning of appliances is recommended.

B. ADJUSTMENTS

7 DAYS AFTER INSTALLATION and EVERY 6 MONTHS THEREAFTER

Inspect bolts, nuts, screws, (bearing set screws), nonpermanent gas connections (unions, shut-off valves, orifices, and ground connections). Motor and drive belts **should be** examined. Cracked or seriously frayed belts **should be** replaced. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of ALL safety devices (door switch, lint drawer switch, sail switch, burner, and hi-limit thermostats).

C. LUBRICATION

The motor bearings, idler bearings...and under normal/most conditions the tumbler bearings are permanently lubricated. It is physically possible to re-lubricate the tumbler bearings if you choose to do so even though this practice *is not necessary.* Use Shell Alvania #3 or its equivalent. The tumbler bearings used in the dryer **do not have** a great fitting. Provisions are made in the bearing housing for the addition of a grease fitting which can be obtained elsewhere.

The impellor (fan) shaft bearings **should be** lubricated every three (3) months.

SECTION III

INSTALLATION REQUIREMENTS

Installation **should be** performed by competent technicians in accordance with local and state codes. In the absence of these codes, the installation **must conform** to applicable American National Standards: National Fuel Gas Code ANSI.Z223.1-LATEST EDITION or National Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the installation **must conform** to applicable Canadian Standards: CAN/CGA-B149.1-M91 (Natural Gas) or CAN/CGA-B149.2-M91 (L.P. Gas) or LATEST EDITION (for General Installation and Gas Plumbing) or Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

A. ENCLOSURE, AIR SUPPLY, and EXHAUST REQUIREMENTS

NOTE: The following information is very brief and general. For detailed description, refer to the "ML-170 Installation Manual" (**ADC** Part No. 112141).

Bulkheads and partitions around the dryer **should be** made of noncombustible materials. Allowances **should be** made for the opening and closing of the control door and lint drawer. Also, allowances **should be** made in the rear for ease of maintenance. (Refer to appropriate installation manual for recommended distances and minimum allowances required.)

When the dryer is operating, it draws in room air, heats it, passes this air through the tumbler (basket), and exhausts it out of the building. Therefore, the room air **must be** continually replenished from the outdoors. If the make-up air is inadequate, drying time and drying efficiency will be adversely affected. Ignition problems and sail switch "fluttering" problems on gas dryers may result, and you also could have premature motor failure from overheating. The air supply **must be** given careful consideration to insure proper performance of each dryer.

IMPORTANT: Make-up air ***must be*** provided from a source free of dry cleaning fumes. Make-up air that is contaminated by dry cleaning fumes will result in irreparable damage to motors and other dryer components.

Exhaust duct work **should be** designed and installed by a competent technician. Improperly sized duct work will create excessive back pressure which will result in slow drying, increased use of energy, and shut down of the burner by the airflow (sail) switch, burner hi-limit or lint chamber hi-heat protector thermostat. (Refer to appropriate installation manual for more details.)

CAUTION: IMPROPERLY SIZED or INSTALLED EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

B. ELECTRICAL and GAS REQUIREMENTS

It is your responsibility to have **ALL** electrical connections made by a properly licensed and competent electrician to assure that the electrical installation is adequate and conforms with local and state regulations or codes. In the absence of such codes, **ALL** electrical connections, material, and workmanship **must conform** to the applicable requirements of the National Electrical Code ANSI/NFPA No. 70-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections).

IMPORTANT: Failure to comply with these codes or ordinances and/or the requirements stipulated in this manual can result in personal injury or component failure.

The gas dryer installation **must meet** the American National Standard, National Fuel Gas Code ANSI Z223.1-LATEST EDITION, or in Canada, the Canadian Electrical Codes Parts 1 & 2 CSA C22.1-1990 or LATEST EDITION (for Electrical Connections) as well as, local codes and ordinances, and **must be** done by a qualified technician.

NOTE: Undersized gas piping will result in ignition problems and slow drying and can create a safety hazard.

The dryer **must be** connected to the type of gas (natural or L.P. [liquid propane]) indicated on the dryer data label. If this information ***DOES NOT agree with the type of gas available, contact the distributor who sold the dryer or contact the factory.***

The gas input ratings shown on the dryer data label are for elevations up to 2,000 feet (610 meters), unless elevation requirements of over 2,000 feet (610 meters) were specified at the time the dryer order was placed with the factory. The adjustment for dryers in the field for elevations over 2,000 feet (610 meters) are made by changing the burner orifices. If this adjustment is necessary, contact the distributor who sold the dryer or contact the factory.

NOTE: Any burner changes ***must be*** made by a qualified technician.

C. OPERATIONAL SERVICE CHECK PROCEDURE

1. Turn on electric power to the dryer.
2. To start dryer:
   a. Display will read "READY."
   b. Press "D" on the keyboard (touchpad) of microprocessor controller (computer).
   c. The dryer will start and the display will show "MANUAL DRYING CYCLE, 00:00 MIN REMAIN."

NOTE: Pressing keyboard (touchpad) selections "A," "B," "C," "D," and "F" will also start the dryer. Six (6) preprogrammed drying cycles ("A" through "F") have been stored in the computer's memory. (Refer to the Computer Operator's Manual for details.)

3. Make a complete operational check of ALL the operating controls to assure that the timing is correct, temperature selection switches are functioning, etc.
4. Make a complete operational check of ALL safety-related circuits: door switch(es), hi-limit thermostat, sail switch, cycling thermostats, etc.
5. For gas dryers a gas pressure test **should be** taken at the gas valve pressure tap of each dryer to assure that the water column pressure is correct and consistent.

NOTE: Water column pressure requirements (measured at the pressure tap on the gas valve body):

Natural Gas - 3.5 inches water column (8.7 mb).

L.P. Gas - 10.5 inches water column (26.1 mb).

6. If computer program changes are required, refer to the Phase 6 OPL Operator's Manual (**ADC** Part No. 112147) for details.

7. The dryer **should be** operated through one complete cycle to assure that no further adjustments are necessary and that **ALL** components are functioning properly.

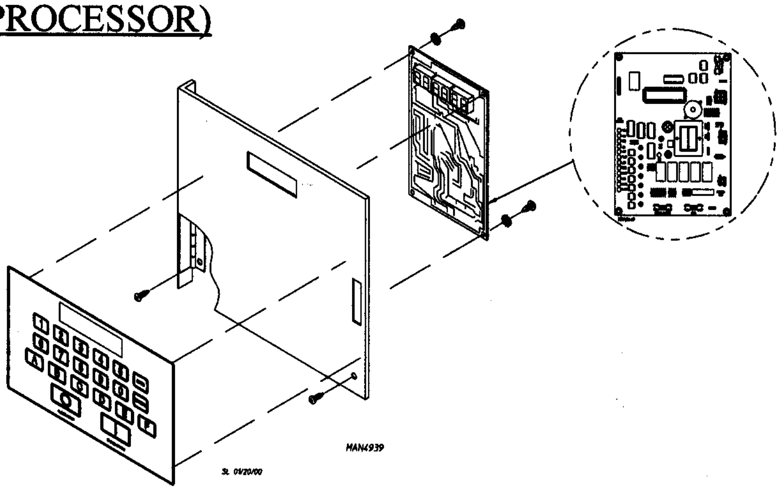
8. Check the electric service phase sequence. While the dryer is operating, check to see if the blower wheel is rotating in the proper direction. Looking from the front, the blower wheel **should spin** in the clockwise (CW) direction. If so, the phasing is correct. If the phasing is incorrect, reverse two (2) leads at connections L1, L2, or L3 of power supply to the dryer.

SECTION IV

DESCRIPTION OF PARTS

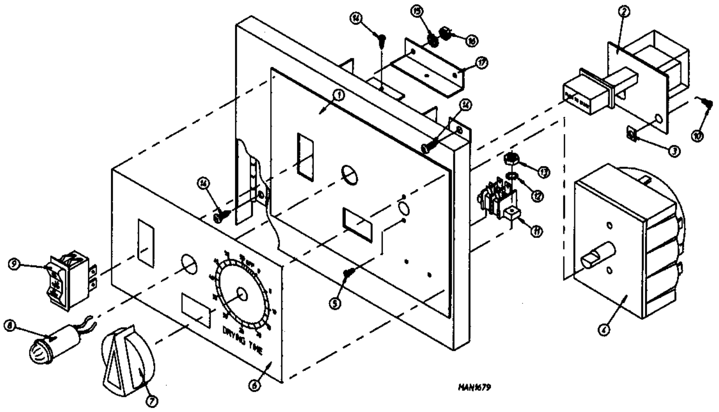
A. CONTROL PANEL (MICROPROCESSOR)

Opening the control panel will allow access to the major components which include the microprocessor computer board and the keyboard (touchpad). The keyboard (touchpad) inputs to the computer what temperature and program has been selected. The computer controls the entire operation of the machine. It accepts inputs and gives outputs to various parts throughout the machine.



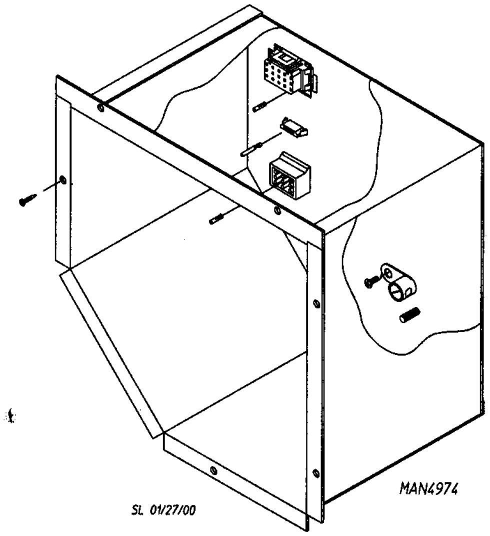
B. CONTROL PANEL (NON-MICROPROCESSOR)

On models without microprocessors, a timer is used to set a specific time. Most non-microprocessor machines are built with dual timers, a 60 minute dry timer and a 15 minute cool down timer. The temperature selector switch selects the "Hi," "Perm Press," or "Lo Temp." The "Push to Start" relay activates the machine which starts the drying cycle.



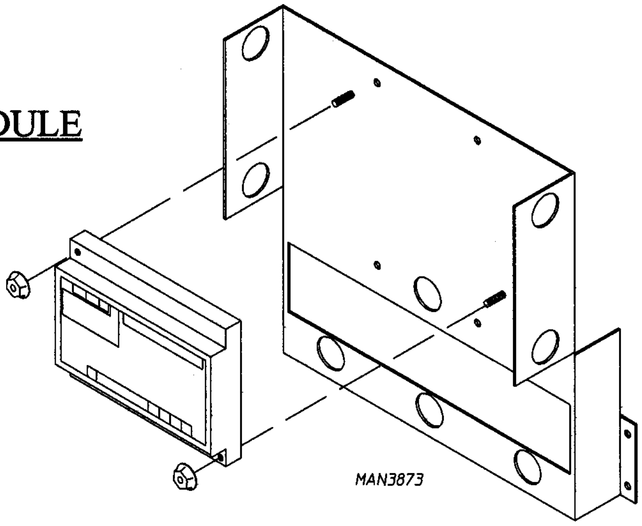
C. CONTROL BOX

Opening the computer panel will reveal the control box. Inside the control box are connectors for various harnesses traveling throughout the machine. Located on the back of the control panel is the computer.



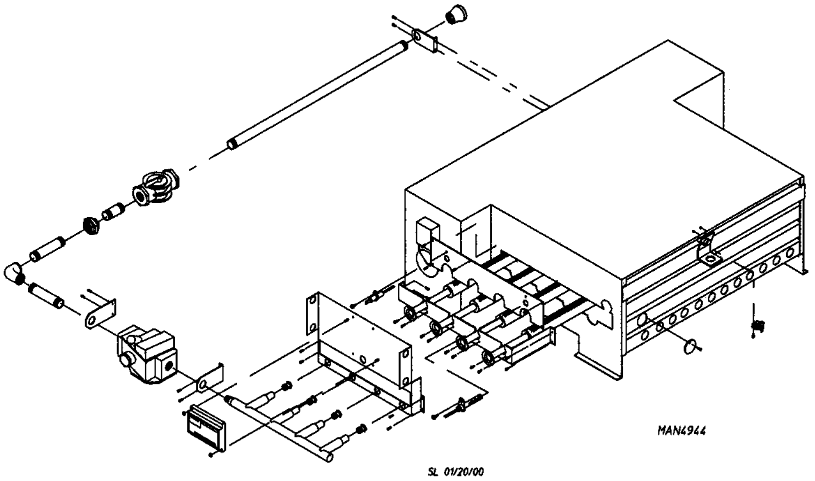
D. HSI (HOT SURFACE IGNITION) MODULE
(Gas Models ONLY)

The HSI (Hot Surface Ignition) system consists of a microprocessor (computer) based control module, along with an ignitor/flame-probe assembly. This control utilizes a 24 V carbide ignitor and a rectified flame sensor/probe signal to locally control **ALL** basic functions in the gas burner.



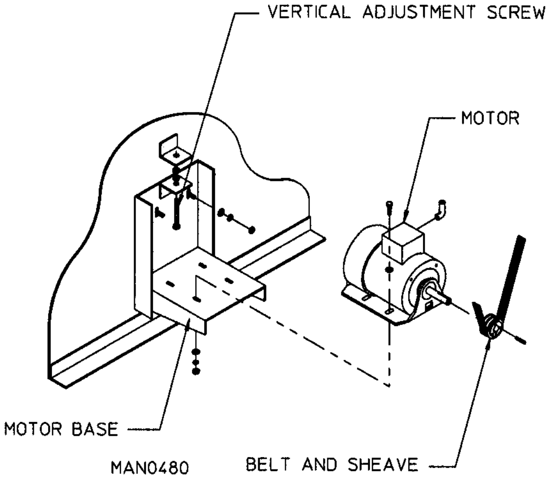
E. GAS BURNER ASSEMBLY

Gas heated dryers are equipped with a gas burner assembly consisting of four (4) burner tubes, gas valve, HSI ignitor, sail switch, and hi-limit thermostat. The inlet piping enters through the rear of the dryer on the left hand side (viewing from the front) and runs to the front of the dryer where the gas valve is located.



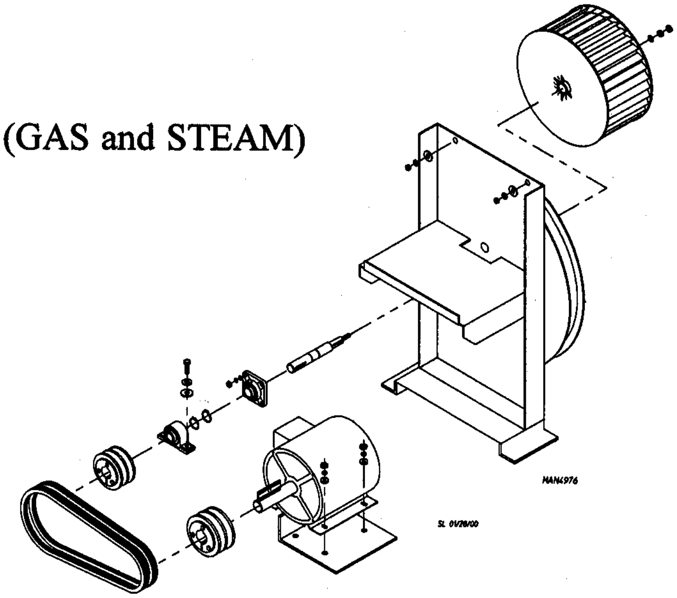
F. DRIVE MOTOR

The T.E.F.C. (Totally Enclosed, Fan-Cooled) drive motor is located approximately lower center of the dryer. It sits on an adjustable base so that the motor can be easily adjusted to the left or right, up or down. The drive motor is a 1 HP (0.75 kw) motor and operates on 208 to 460 volts, 3-phase (3ø), 50/60 Hz.



G. BLOWER MOTOR and IMPELLOR (GAS and STEAM)

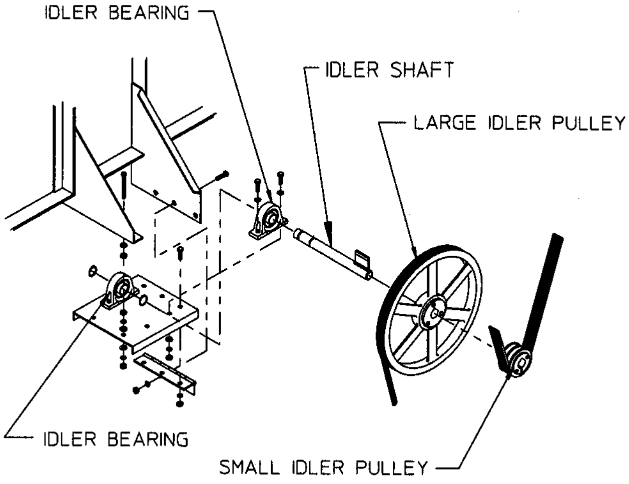
The impellor is shaft driven. The blower motor drives the shaft on which the impellor is mounted. This enables the impellor to run at a higher RPM, thereby producing a higher airflow. (CFM).


MAN4976
SL 01/26/00

H. IDLER ASSEMBLY

(Viewing from the rear of the dryer.)

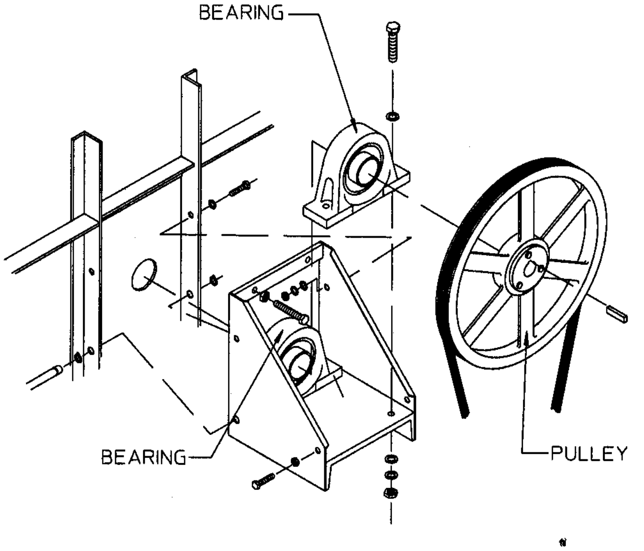
The idler assembly is located approximately on the lower center of the dryer. The idler assembly consists of two (2) idler pulleys, the small and large pulleys. The idler's main purpose is to reduce the speed and increase torque provided to the tumbler (basket) bearing. Also, at the idler assembly, belt tension can be adjusted.


IDLER BEARING
IDLER SHAFT
LARGE IDLER PULLEY
IDLER BEARING
SMALL IDLER PULLEY

MAN0481

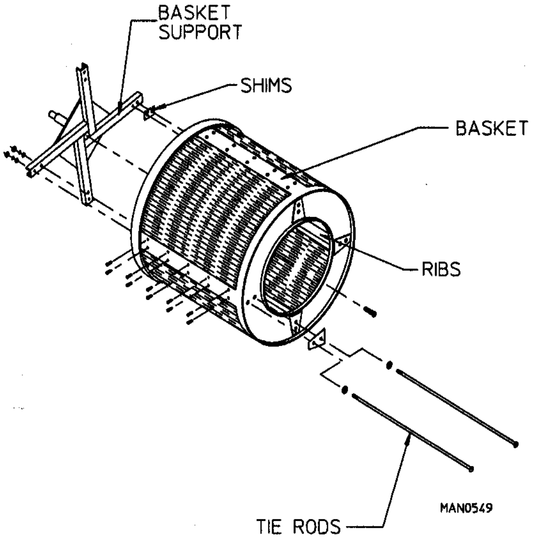
I. TUMBLER (BASKET) BEARING and PULLEY ARRANGEMENT

The tumbler (basket) bearing and pulley arrangement is located (viewing from the rear of the dryer) approximately at the upper center of the dryer. The arrangement consists of a pulley and two (2) bearings which serve to drive, adjust, and support the tumbler (basket).


BEARING
BEARING
PULLEY

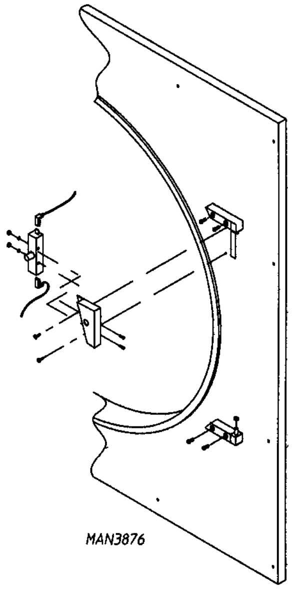
MAN0536

J. TUMBLER (BASKET)



The tumbler (basket) consists of four (4) ribs and four (4) perforated panels, along with a front and back, which are screwed together as an assembly. The tumbler (basket) also consists of tie rods, which support the tumbler (basket) from the front to back. The tumbler (basket) support is used to mate the tumbler (basket) to the drive system in the rear.

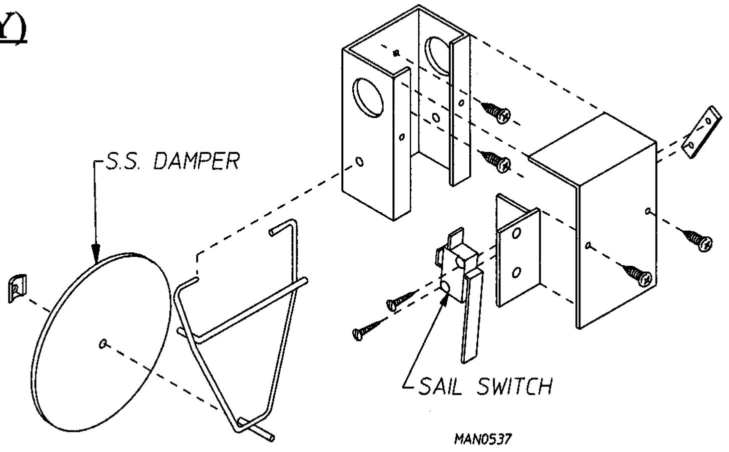
K. MAIN DOOR SWITCH



CURRENT PRODUCTION

The main door switch is located in the main door hinge block. When the main door opens, the switch will also open, preventing the dryer from operating. The main door switch is a safety device and **should never be** disabled.

L. SAIL SWITCH (Gas Models ONLY)

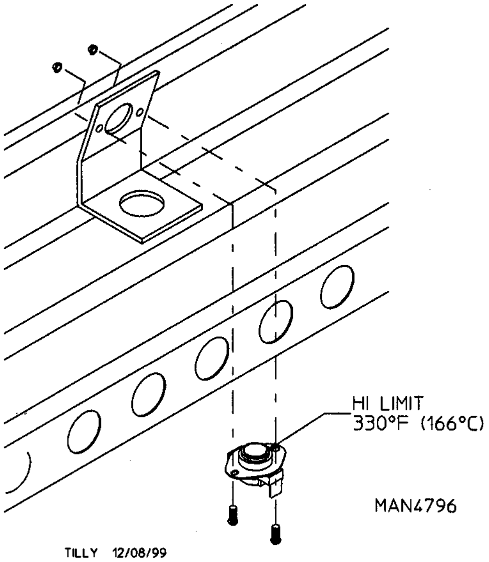


The sail switch is located on the front of the burner box. A sail switch consists of a round damper plate on a lever arm which is in contact with an electric switch. When the air blower comes on, it draws air through the gas burner. This creates a negative pressure inside the burner box, and this negative pressure pulls in the round damper and activates the sail switch. If there is improper airflow, the damper will not pull in, preventing the burner from starting.

Improper airflow can be caused by improperly designed exhaust ducting where the duct run is too long or has too many sharp bends in it. It can also be caused by a lack of make-up air.

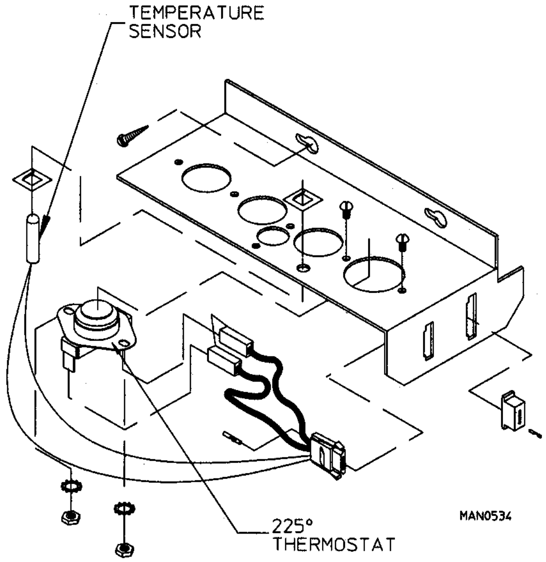
M. HI-LIMIT (Gas Models ONLY)

A hi-limit thermostat is located at the burner. This is a manual reset disc-type thermostat set at 330° F (166° C). If the flame in the burner should get too hot, this thermostat will shut off the burner. This is generally caused by low airflow through the dryer.



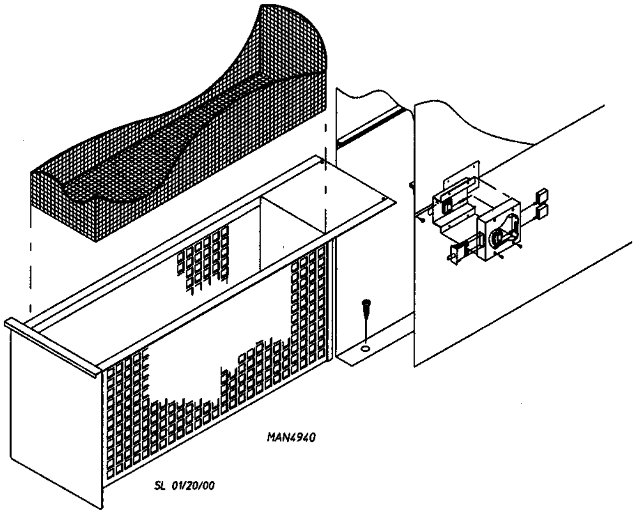
N. AUTOMATIC RESET THERMOSTAT

This is located inside the dryer in the lint compartment above the lint drawer. This thermostat senses the heated air after it has passed through the tumbler (basket). If the air temperature gets too hot, the thermostat will shut off the burner. The dryer will not run until the air temperature cools down. At this time, the thermostat will reset. Tumbler (basket) and blower will run, but the dryer will not heat.



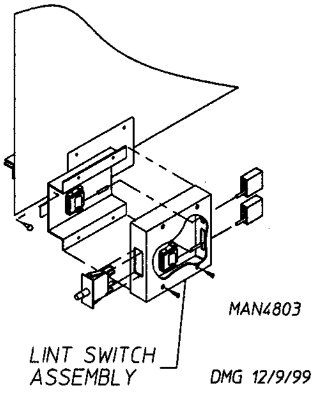
O. LINT DRAWER

The lint drawer is a pullout type and is located at the bottom of the dryer in the lint compartment. Simply grab the lint drawer handle, slide out the drawer, brush off the lint, and slide the drawer back in. The lint screen **must be** kept clean in order for the dryer to operate properly and efficiently.



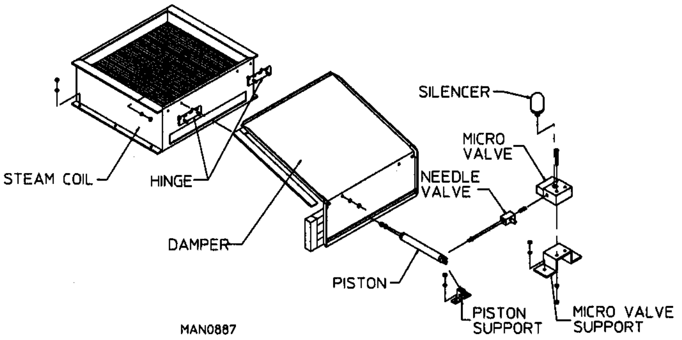
P. LINT DRAWER SWITCH

The lint drawer switch is located in the lint compartment and attached to the side of the lint drawer track. The lint drawer switch insures that the dryer will operate only when the lint drawer is completely closed. This is a safety device and **should never be** disabled.


MAN4803
LINT SWITCH ASSEMBLY
DMG 12/9/99

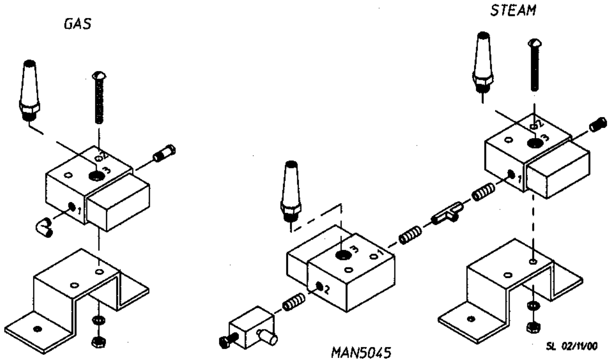
Q. STEAM DAMPER SYSTEM

The newest type system is called the steam damper. It is shown to the right and it uses a piston with compressed air to open and close the steam damper which in turn allows the air to flow either through the coil for heat, or under the coil for cool down. Air supply is 80 PSI +/- 10 PSI (5.51 bars +/- 0.69 bars).


SILENCER
MICRO VALVE
NEEDLE VALVE
STEAM COIL
HINGE
DAMPER
PISTON
PISTON SUPPORT
MICRO VALVE SUPPORT
MAN0887

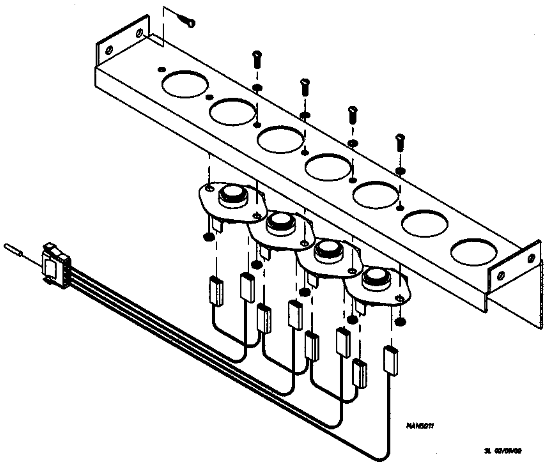
R. COMPRESSED AIR REQUIREMENTS

The model ML-170 requires an external supply of air (2.5 cfm @ 80 PSI [0.07 cmm @ 5.51 bars]) on the steam models the air is necessary to operate the damper system. On both steam, as well as the gas model, the air is necessary/required for the blower air jet operation...to clean lint from the impellor/fan (squirrel cage type).


GAS
STEAM
MAN5045
SL 02/11/00

S. TEMPERATURE SENSOR BRACKET (NON-COMPUTER)

The non-computer temperature sensor bracket consists of four (4) thermostats. Three (3) of them are the certain temperatures that the machine should cycle on and off at. The fourth one is the 225° F (107° C), safety tumbler (basket) hi-limit that should only react when it sensors an over heat condition exceeding 225° F (107° C).


MAN5011
SL 02/09/00

SECTION V

SERVICING

INTRODUCTION

ALL electrical and mechanical service or repairs **should be** made with the electrical power to the dryer disconnected (power off).

WARNING: PERSONAL INJURY COULD RESULT.

The information provided in this section **should not be** misconstrued as a device for use by an untrained person making repairs. Service work **should be** performed by competent technicians in accordance with local, state, and federal codes.

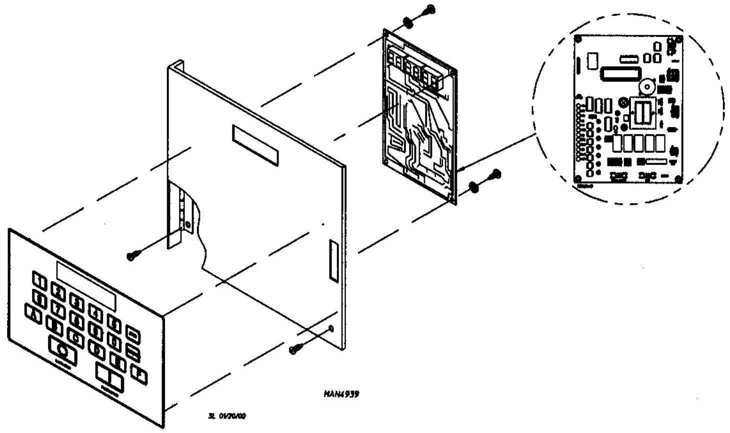
When contacting the factory for assistance, always have the dryer model and serial numbers available.

CAUTION: Observe **ALL** safety precautions displayed on the dryer or specified in this manual before and while making repairs.

Before considering replacement, make sure that **ALL** connectors are in place and making proper contact.

A. COMPUTER CONTROLS

To Replace Computer



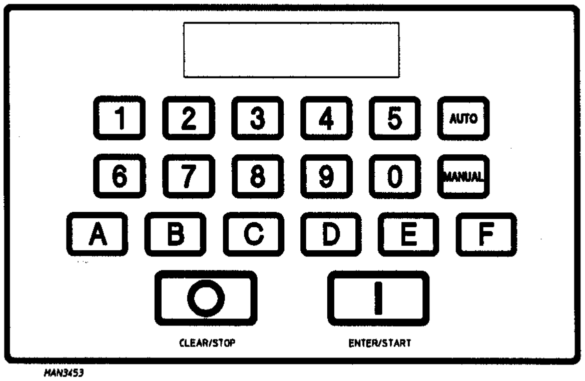
1. Disconnect electrical power to the dryer.
2. Disconnect main power harness along with the three (3) other connectors located on the computer board, from rear of computer by squeezing locking tab and pulling connector straight back.
3. Disconnect the "green" ground wire from the computer and the wire connected to the air jet spade.
4. Disconnect keyboard (touchpad) ribbon from the computer.
5. Remove the two (2) Phillips screws securing the computer to the sheet metal control panel. Remove the board by pulling the other two (2) corners off the clinch studs.
6. Install new computer by reversing this procedure.
7. When replacing the computer, the "A" and "B" factors **must be** reprogrammed. (Refer to "Computer Operator's Manual" for details.)

NOTE: The "A" and "B" factors are printed on a label located on the rear of the control panel (refer to illustration).

8. Reestablish electrical power to the dryer.

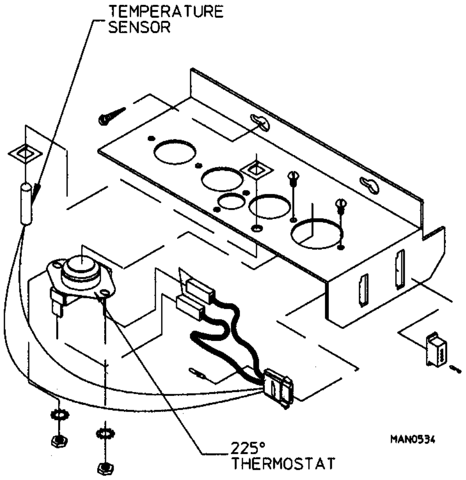
To Replace Keyboard (Touchpad) Label Assembly

1. Discontinue electrical power to the dryer.
2. Unplug keyboard (touchpad) ribbon from rear of the microprocessor computer.
3. Slowly peel off and remove keyboard (touchpad) label assembly from control panel.
4. Peel paper backing off new keyboard (touchpad) label assembly.



5. Holding the new keyboard (touchpad) label assembly close to the panel, insert the keyboard (touchpad) ribbon through the rectangular slot in the control panel. Align label assembly into position by matching the red viewing window on the label to the rectangular cutout in the panel and gently press into place.
6. Connect keyboard (touchpad) ribbon to the computer.
7. Reestablish electrical power to the dryer.

To Replace Microprocessor Temperature Sensor Probe



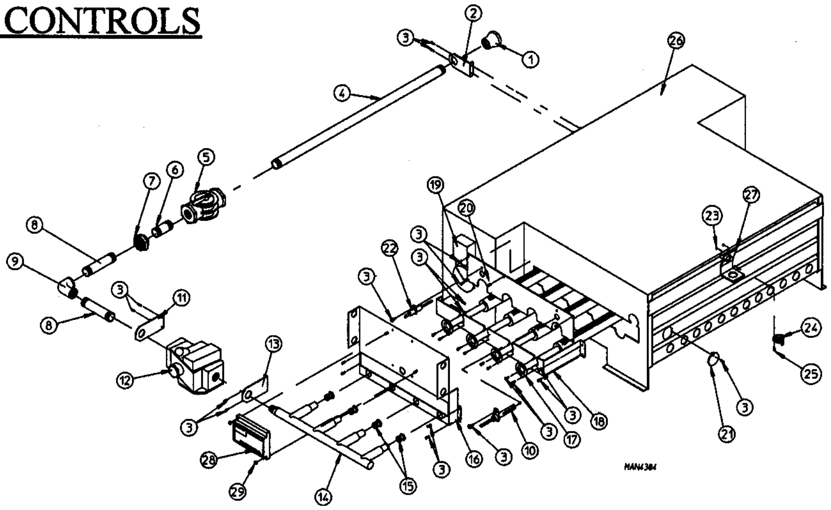
1. Discontinue electrical power to the dryer.
2. Remove lint drawer. Remove two (2) screws securing lint door and remove lint door.
3. Remove microprocessor sensor bracket assembly from dryer.
   a. Disconnect sensor bracket harness connector.
   b. Loosen the two (2) Phillips head screws securing bracket assembly to dryer and remove bracket from dryer.

NOTE: ***DO NOT*** remove screws.

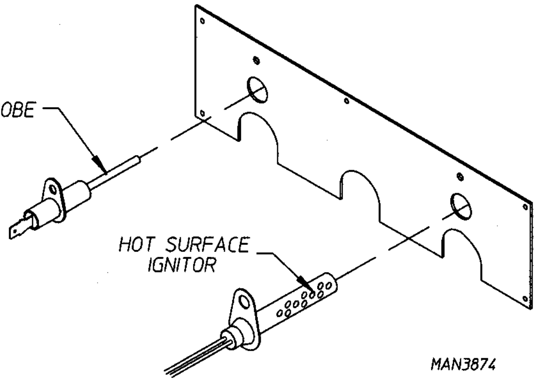
4. Disassemble sensor probe from bracket assembly by removing the top push-on fastener securing the probe from bracket. Use a small screwdriver to slowly pry the fastener off.
5. Disconnect the two (2) "orange" wires from the high heat (225° F [107° C]) thermostat, and remove modular bracket connector, wires, and probe from bracket assembly.
6. Install new sensor probe assembly (**ADC** Part No. 880251) by reversing procedure.
7. Reestablish electrical power to the dryer.

NOTE: If, when electrical power is reestablished, the microprocessor computer display reads "TEMP SENSOR FAIL," check for a loose connection in the wiring.

B. IGNITION CONTROLS


2
3
1
26
4
5
6
7
8
9
3
11
8
12
13
3
28
29
14
15
3
16
3
10
17
3
18
19
20
3
3
22
3
23
27
24
25
3
21

To Remove Hot Surface Ignitor (Refer to above burner illustration)


FLAME PROBE
HOT SURFACE IGNITOR
MAN3874

1. Discontinue electrical power to the dryer.
2. Disconnect the two (2) wires connecting the ignitor to the HSI module.
3. Disassemble ignitor from burner by removing the self tapping screw.
4. Reverse procedure for installing new ignitor.

To Remove Flame Probe Assembly

1. Discontinue electrical power to the dryer.
2. Disconnect the wire attaching the flame probe to the HSI module.
3. Disassemble flame probe from burner by removing the self tapping screw.
4. Reverse procedure for installing new flame probe.

To Replace Gas Valve (Refer to above burner illustration)

1. Discontinue electrical power to the dryer.
2. Close shut-off valve(s) in gas supply line.
3. Disconnect gas valve wiring.

NOTE: Identify location of each wire for correct reinstallation.

4. Break union connection before gas valve.
5. Loosen and remove four (4) screws securing pipe brackets to burner.
6. Remove gas valve/manifold assembly from dryer.

7. Remove valve mounting bracket, manifold, and piping from gas valve.

8. Reverse procedure for installing new gas valve.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Replace Main Burner Orifices

1. Refer to "To Replace Gas Valve" and follow ***Step #1 through Step #6.***

2. Unscrew main burner orifices and replace.

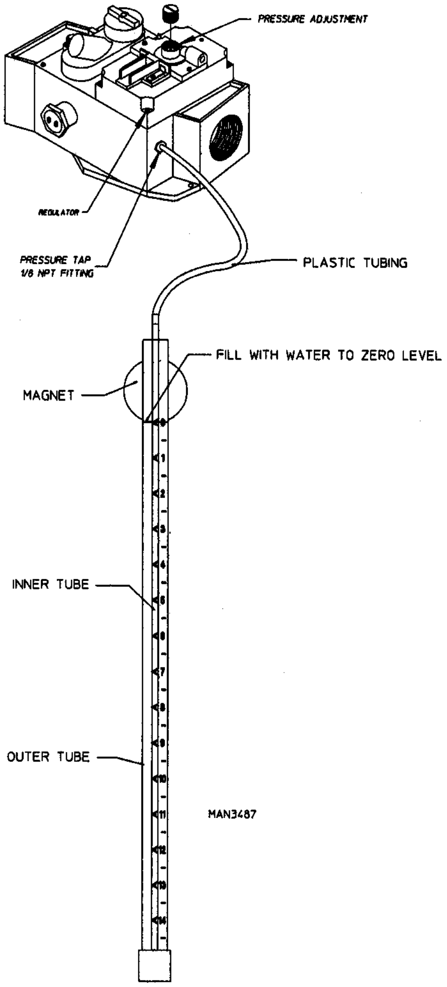
NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

3. Reversing the removal procedure for reinstalling.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Test and Adjust Gas (Water Column) Pressure



There are two (2) types of devices commonly used to measure water column pressure. They are spring/mechanical-type gauges and manometers. The spring/mechanical-type gauge is not recommended, because it is easily damaged and not always accurate. A manometer is simply a glass or transparent plastic tube with a scale in inches. When filled with water and pressure applied, the water in the tube rises showing the exact water column pressure.

NOTE: Manometers are available from the factory by ordering **ADC** Part No. 122804.

1. To Test Gas Water Column (W.C.) Pressure:

   a. Connect water column test gauge connection to gas valve pressure tap (1/8" NPT). This pressure tap is located on the outlet (manifold) side of the valve.

   b. Start dryer. With burner on, the correct water column reading in inches would be:

      Natural Gas - 3.5 Inches Water Column (8.7 mb).

      L.P. Gas - 10.5 Inches Water Column (26.1 mb).

2. To Adjust Water Column Pressure (natural gas only, L.P. gas **must be** regulated at source):

   a. Remove the slotted vent cap on the top of the valve.

   b. Turn the slotted adjustment screw located on the top of the valve next to the terminals. Turn clockwise (CW) to increase manifold pressure and counterclockwise (CCW) to decrease.

NOTE: If correct W.C. pressure **cannot** be achieved, problems may be due to an undersized gas supply line, a faulty or underrated gas meter, etc.

To Convert from Natural Gas to L.P. Gas

NOTE: **ALL** dryers are sold as natural gas, unless otherwise specified at the time the dryer order was placed. For L.P. gas the dryer ***must be*** converted as follows.

1. Refer to "Replace Gas Valve" and follow ***Step #1 through Step #6.***

2. Remove the four (4) screws which secure the top cap assembly. This assembly contains the regulator adjustment screw and the terminal connections.

3. Replace the top cap assembly with the L.P. version.

4. Unscrew main burner orifices and replace with L.P. orifices.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

5. Reverse the procedure for reinstalling valve assembly to the dryer.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

NOTE: There is no regulator provided in an L.P. dryer. The column pressure ***must be*** regulated at the source (L.P. tank) or an external regulator ***must be*** added to each dryer.

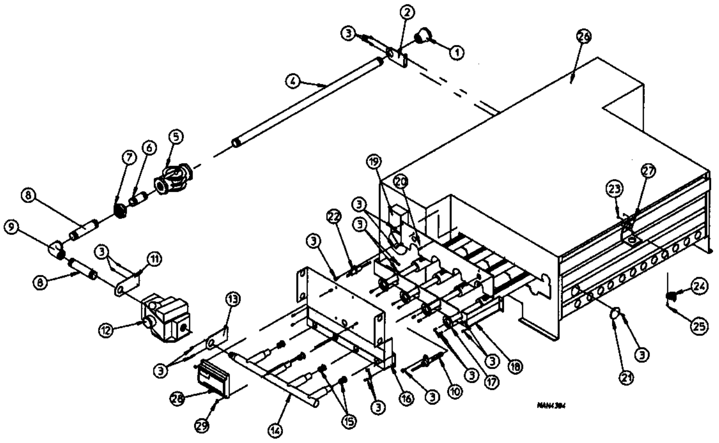
To Replace Burner Tubes

1. Refer to "Replace Gas Valve" and follow ***Step #1 through Step #6.***

2. Disconnect **ALL** wiring to the HSI (Hot Surface Ignition) module be sure to mark **ALL** wires and where they go for reinstallation.

3. Remove four (4) screws securing manifold rest and remove rest.

4. Remove the screws securing the front flanges of the burner tubes to the burner tube rest.



5. Remove the screws securing the burner tube rest to the oven and remove this rest.

6. Remove screws securing the flame probe, and HSI Ignitor burner box cover plate to the oven.

7. Remove burner tubes by sliding them out.

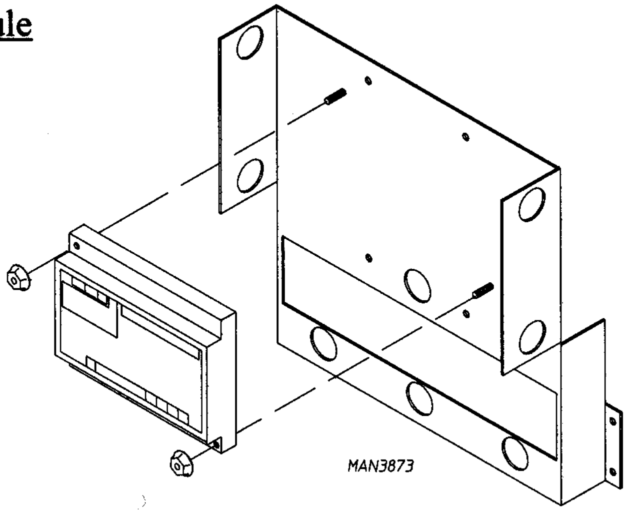
8. Replace by reversing procedure.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Replace HSI (Hot Surface Ignition) Module

1. Discontinue electrical power to the dryer.
2. Remove the wires connected to the terminal strip at the bottom of the module.
3. Remove the two (2) pal nuts securing the module to the mounting bracket.
4. Replace module by reversing procedure.
5. Reestablish electrical power to the dryer.



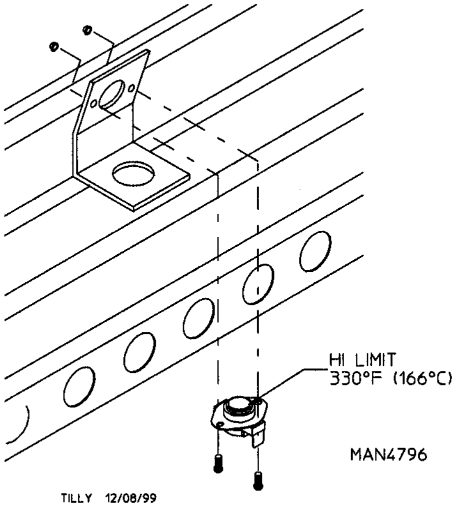
C. THERMOSTATS

To Replace Burner Hi-Limit Thermostat (Gas Models Only)

This thermostat is an important safety device serving as an added protection against failure of the airflow (sail switch) to open in the event of motor failure or reduced airflow condition.

IMPORTANT: **UNDER NO CIRCUMSTANCES** should heat circuit safety devices ever be disabled.

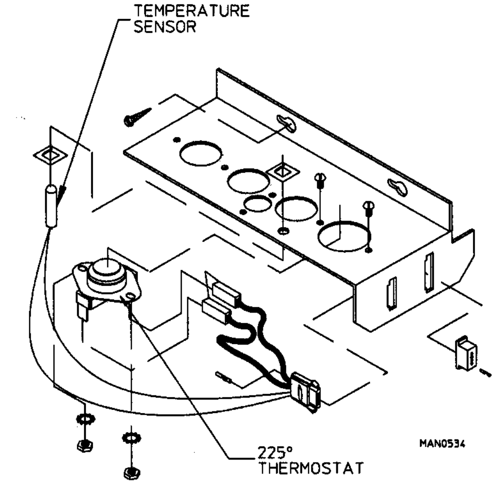
1. Discontinue electrical power to the dryer.
2. Disconnect wires from hi-limit thermostat.
3. Remove screw, washer, and nuts securing thermostat to the bracket. Remove thermostat.
4. Reversing procedure for installing new thermostat.
5. Reestablish electrical power to the dryer.



To Replace Lint Compartment Hi-Heat Protector (225° F [107° C]) Thermostat

This thermostat is part of the "sensor bracket assembly" and is secured to the underside of the tumbler (basket) wrapper in the lint compartment. As a safety device, this thermostat will open (shut off) the heating unit circuit if an excessive temperature occurs. The dryer motors will remain on, even if the thermostat is open.

IMPORTANT: UNDER NO CIRCUMSTANCES should heat safety devices be disabled.



1. Disconnect electrical power to the dryer.
2. Remove lint drawer. Remove two (2) screws securing lint door and remove lint door.
3. Locate sensor bracket assembly and loosen the two (2) Phillips head screws securing bracket assembly to the tumbler (basket) wrapper.

NOTE: ***DO NOT*** remove the screws.

4. Remove bracket assembly by slightly sliding bracket towards the rear of the dryer and to the left.
5. Disconnect sensor bracket harness connector and remove bracket assembly from dryer.
6. Disconnect the two (2) "orange" wires from the thermostat.
7. Disassemble thermostat from bracket assembly by removing the two (2) mounting screws, washers, and nuts.
8. Reverse this procedure for installing a hi-heat protector thermostat.
9. Reestablish electrical power to the dryer.

D. SAIL SWITCH ASSEMBLY (Gas Models ONLY)

The sail switch is a heat circuit safety device which controls the burner circuit only. When the dryer is operating and there is proper airflow, the sail switch damper pulls in and closes the sail switch. Providing **ALL** the other heat-related circuits are functioning properly, ignition **should now be** established. If an improper airflow occurs, the sail switch damper will release, and the circuit will open.

To Replace Sail Switch

1. Discontinue electrical power to the dryer.
2. Remove the two (2) screws which hold the sail switch box cover to sail switch box.
3. Disconnect the two (2) or three (3) wires from the switch.
4. Disassemble sail switch from mounting bracket by removing the two (2) screws securing switch in place.
5. Reverse this procedure for installing new sail switch. Adjust sail switch as described in the next section.

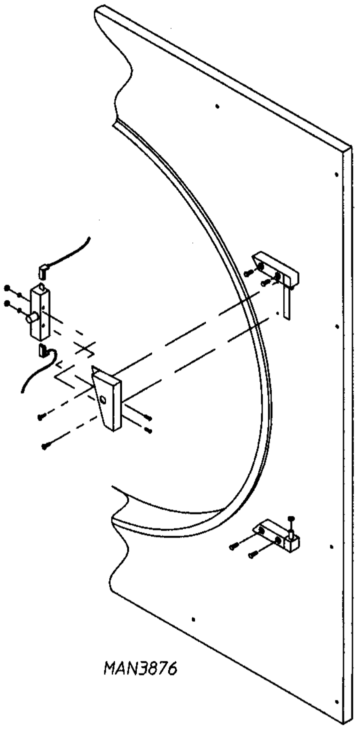
To Adjust Sail Switch

With the dryer operating at a high temperature setting, pull the sail switch away from the burner. The sail switch should open and extinguish the burner. Let the sail switch damper return to the burner wall. The sail switch should close to restart the burner ignition cycle. If the sail switch circuit does not operate as described, bend the actuator arm of the sail switch accordingly until proper operation is achieved. To check proper "open" position of sail switch, open main door, manually depress main door switch, and start dryer. With the main door open and the dryer operating, the sail switch **should be** open, and the burner should not come on.

CAUTION: ***DO NOT*** abort this switch by taping or screwing sail switch damper to burner. **PERSONAL INJURY or FIRE COULD RESULT**.

E. FRONT PANEL and MAIN DOOR ASSEMBLIES

To Replace Main Door Switch



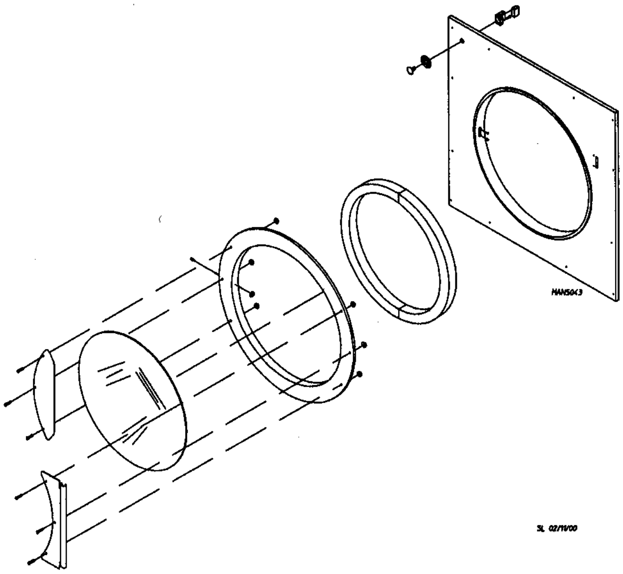
CURRENT PRODUCTION

1. Discontinue electrical power to the dryer.
2. Open main door.
3. Remove the two (2) Phillips head screws holding the main door switch bracket assembly in place.
4. Remove door switch bracket from front panel and disconnect wiring from switch.
5. Disassemble door switch from bracket by removing two (2) Phillips screws and nuts securing on switch to the housing.
6. Reverse this procedure for installing new door switch.
7. Reestablish electrical power to the dryer.

IMPORTANT: UNDER NO CIRCUMSTANCES should the door switch be disabled.

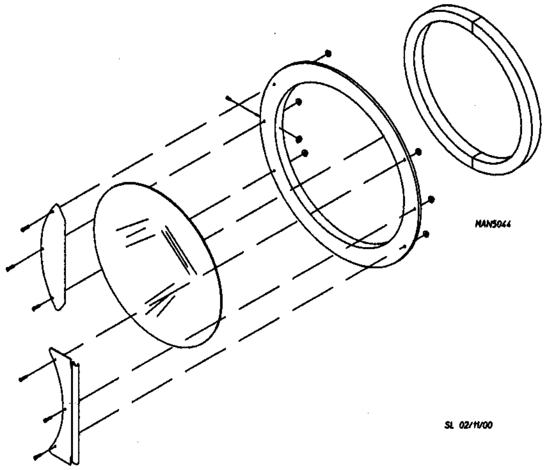
To Replace Main Door Assembly

1. Remove screws holding top hinge block to front panel.
2. Remove door by lifting up off of bottom hinge.
3. Reverse this procedure for reinstalling new main door assembly.



SL 02/11/00

To Install New Main Door Glass



1. Remove main door assembly from dryer (follow main door removal procedure).
2. Lay main door on flat surface with the front of the door facing up.
3. Remove the four (4) acorn nuts securing the glass.
4. Remove glass and clean **ALL** old sealant off main door. This area **must be** completely cleaned for correct bonding.
5. Apply a narrow bead of silicone (**ADC P/N 170730**) **ALL** around main door area where glass will rest.
6. Install glass onto door adhesive and slightly press glass in place.

IMPORTANT: ***DO NOT*** press hard or silicone thickness between the glass and door **will be** reduced, resulting in poor bonding.

7. Fasten the four (4) acorn nuts to secure glass in place.

IMPORTANT: ***DO NOT*** over tighten reducing the thickness of the silicone contact between glass and door.

8. The door assembly **should now be** put in an area where it will not be disturbed for at least 24 hours. Depending on the conditions, the curing time of this adhesive is 24 to 36 hours.
9. After 24-hour curing period, install main door on dryer by reversing ***Step #1***.

To Replace Front Panel

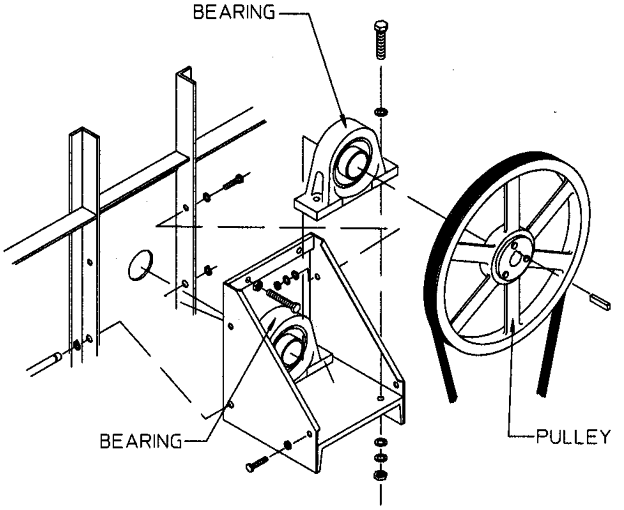
1. Discontinue electrical power to the dryer.
2. Remove main door switch and bracket assembly.
3. Follow procedure for removal of main door assembly.
4. Open control (service) door.
5. Remove lint drawer and open lint door by removing two (2) screws.
6. Remove the twelve (12) Phillips head screws securing front panel to dryer.
7. Remove "EMERGENCY STOP" (E-Stop) wiring and "EMERGENCY STOP" (E-Stop) button.
8. Pull wires up through front panel door switch wire channel and gently remove front panel assembly.
9. Reverse this procedure for installing new front panel.
10. Reestablish electrical power to the dryer.

To Replace Main Door Hinge Blocks

1. Discontinue electrical power to the dryer.
2. Follow procedure for removal of main door assembly.
3. Disassemble bottom hinge block from front panel by removing the Allen head screws located inside the hinge block.
4. Reassemble by reversing removal procedure.
5. Reestablish electrical power to the dryer.

F. PULLEYS

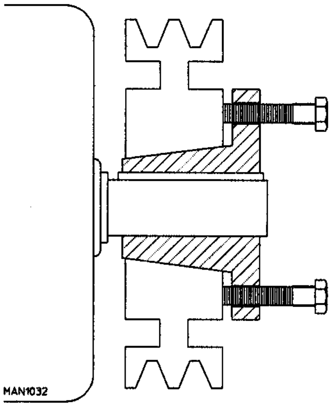
To Replace Tumbler (Basket) Pulley



MAN0536

1. Loosen V-belts. Rotate pulley and roll V-belts out of grooves.
2. Remove cap screws from the bushings.
3. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A."
4. Remove bushing, pulley, and key.
5. Assemble bushing and sheave as shown in figure "B" on **page 26**. When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
6. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
7. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

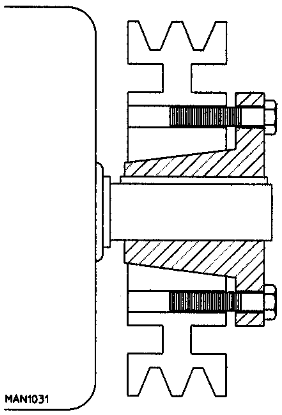
A



IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 30 ft-lbs. (41 Nm). If greater tightening forces are applied, excess pressures **will be** created in the hub of the mounted sheave which may cause it to crack.

To Replace Small Idler Pulley

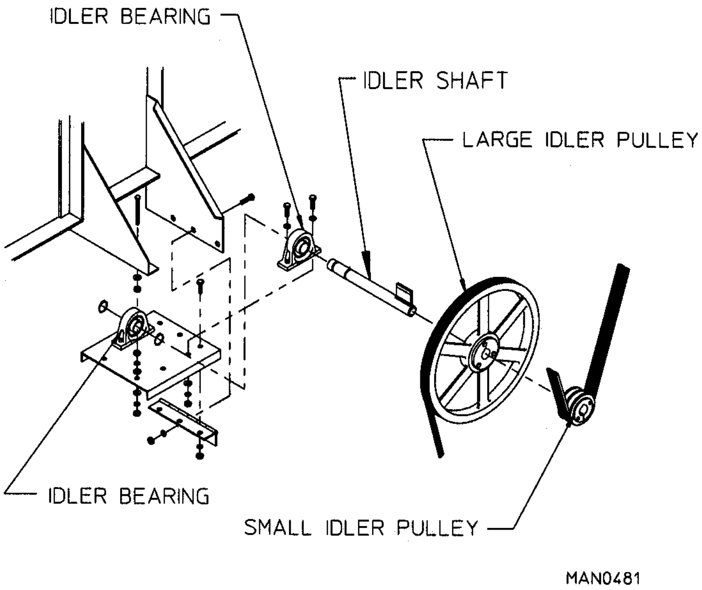
B



1. Loosen V-belts. Rotate pulley and roll V-belts out of grooves.
2. Remove cap screws from the bushings.
3. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on previous page.
4. Remove bushing, pulley, and key.
5. Assemble bushing and sheave as shown in figure "B." When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
6. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
7. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 6 ft-lbs. (8 Nm), if greater tightening forces are applied, excess pressures **will be** created in the hub of the mounted sheave which may cause it to crack.

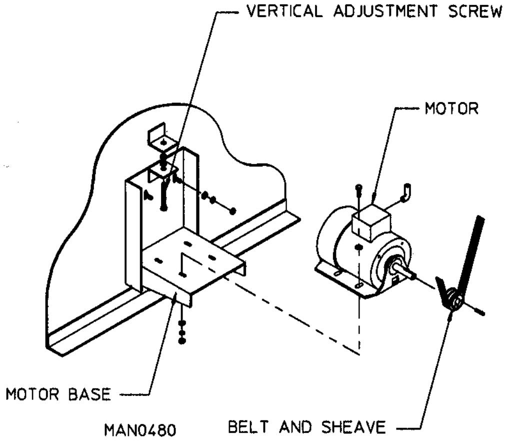
To Replace Large Idler Pulley



1. Loosen V-belts. Then, rotate pulley and roll V-belts out of grooves.
2. Remove cap screws.
3. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on previous page.
4. Remove bushing, pulley, and key.
5. Assemble bushing and sheave as shown in figure "B." When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
6. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
7. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 15 ft-lbs. (20 Nm). If greater tightening forces are applied, excess pressures **will be** created in the hub of the mounted sheave which may cause it to crack.

To Replace Motor Pulley

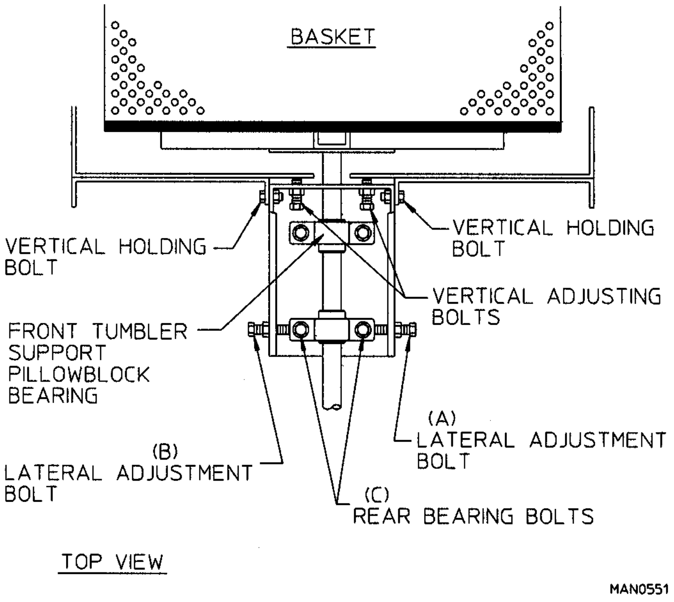

VERTICAL ADJUSTMENT SCREW
MOTOR
MOTOR BASE
MAN0480
BELT AND SHEAVE

1. Loosen V-belts. Rotate pulley and roll V-belts out of grooves.
2. Remove cap screws from bushing.
3. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on **page 25**.
4. Remove bushing, pulley, and key.
5. Assemble bushing and sheave as shown in figure "B" on previous page. When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
6. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
7. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 6 ft-lbs., (8 Nm) if greater tightening forces are applied, excess pressures **will be** created in the hub of the mounted sheave which may cause it to crack.

G. TUMBLER (BASKET) ASSEMBLY

Tumbler (Basket) Alignment (Vertical) (Up and Down Adjustment)


BASKET
VERTICAL HOLDING BOLT
VERTICAL HOLDING BOLT
VERTICAL ADJUSTING BOLTS
FRONT TUMBLER SUPPORT PILLOWBLOCK BEARING
(A) LATERAL ADJUSTMENT BOLT
(B) LATERAL ADJUSTMENT BOLT
(C) REAR BEARING BOLTS
TOP VIEW
MAN0551

1. Discontinue electrical power to the dryer.
2. Remove back guard.
3. Loosen the two (2) vertical holding bolts on the side at the top of the bearing box (one [1] on each side).
4. Back off jam nuts on vertical adjustment bolts.

5. Turn these bolts clockwise (CW) evenly to raise tumbler (basket) or counterclockwise (CCW) evenly to lower tumbler (basket).

6. Rotate tumbler (basket) from front and check alignment with front door opening.

7. Leave a larger gap from the inside ring on the top of the front panel opening to the tumbler (basket) and a smaller gap on the bottom to compensate for the weight of the clothes when wet.

8. Retighten the two (2) vertical holding bolts on the sides, at the top of the bearing box, and the jam nuts on the two (2) vertical adjustment bolts.

9. Check tumbler (basket) drive belt for proper tension. Adjust if necessary. (Refer to Section I).

10. Replace back guard.

11. Reestablish electrical power to the dryer.

Tumbler (Basket) Alignment (Lateral) (Side to Side Adjustment)

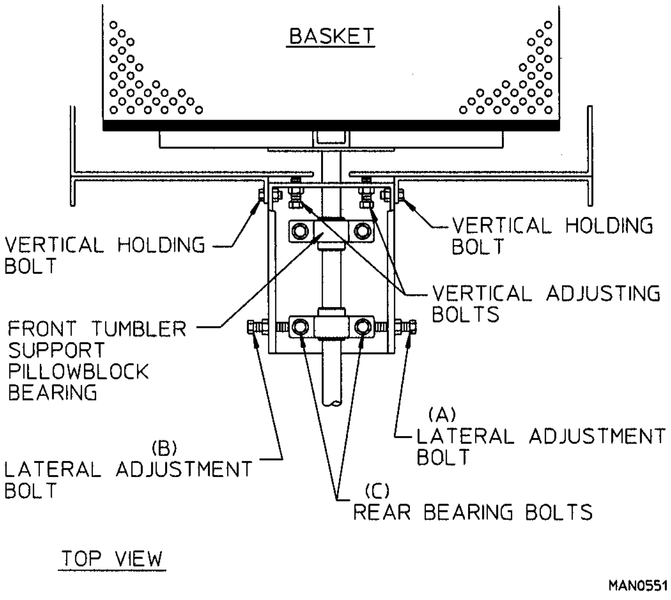
1. Discontinue electrical power to the dryer.

2. Remove back guard.

3. Loosen rear pillow block bearing bolts (C).

4. Back off jam nuts on the two (2) lateral adjustment bolts (A) and (B).

5. Simultaneously loosen one bolt and tighten the other. This will move the rear pillow block bearing. Center the tumbler (basket) in the wrapper cavity.


BASKET
VERTICAL HOLDING BOLT
VERTICAL HOLDING BOLT
VERTICAL ADJUSTING BOLTS
FRONT TUMBLER SUPPORT PILLOWBLOCK BEARING
(A) LATERAL ADJUSTMENT BOLT
(B) LATERAL ADJUSTMENT BOLT
(C) REAR BEARING BOLTS
TOP VIEW
MAN0551

6. Tighten and secure both lateral adjustments bolts (A) and (B) and jam nuts.

7. Tighten pillow block bearings bolts (C) loosened in ***Step #3***.

8. Replace back guard.

9. Reestablish electrical power to the dryer.

To Replace Tumbler (Basket) or Tumbler (Basket) Support

1. Discontinue electrical power to the dryer.

2. Follow procedure for removal of main door assembly.

3. Follow procedure for removal of front panel assembly.

4. Remove back guard.

5. Remove tumbler (basket) belts.

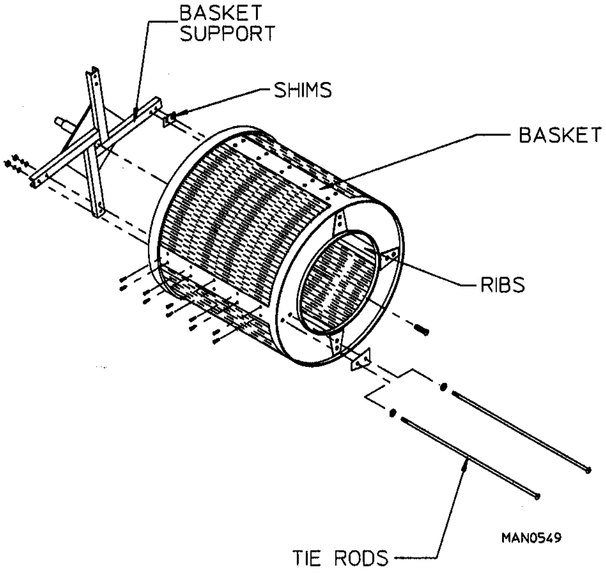
6. Remove tumbler (basket) pulley.

7. Remove tumbler (basket) assembly and support.

   a. Loosen the two (2) set screws on both the pillow block bearing collars.

   b. Remove the retaining rings from the grooves of the tumbler (basket) shaft.

   c. Remove the tumbler (basket) and support assembly from the front of the dryer. If the tumbler (basket) **cannot** be removed freely, clean the shaft area and spray WD-40 or similar lubricant. With a block of wood against the shaft end, strike the block wood with a hammer or mallet to move the shaft past any burrs made by the set screws.



IMPORTANT: Never strike the shaft directly with a hammer.

8. Remove tumbler (basket) from tumbler (basket) support.

   a. Remove the bolt in the center of the tumbler (basket) back wall.

   b. Loosen and remove the eight (8) sets of nuts and washers from tumbler (basket) tie rods. Remove the eight (8) tie rods.

   c. Replace either tumbler (basket) or tumbler (basket) support by reversing procedure.

NOTE: Shims might be needed between tumbler (basket) and tumbler (basket) support to insure proper balancing of tumbler (basket).

9. Reassemble components onto dryer by reversing ***Step #2 through Step #8***.

10. Check tumbler (basket) vertical/lateral alignment and adjust if necessary.

11. Replace back guard.

12. Reestablish electrical power to the dryer.

H. BEARINGS (Refer to illustrations in section F "Pulleys")

To Replace Rear Tumbler (Basket) Support Pillow Block Bearing

1. Discontinue electrical power to the dryer.

2. Remove back guard.

3. Remove tumbler (basket) pulley.

4. Loosen lateral adjustment jam nuts and bolts. (Refer to illustration in section G "Tumbler (Basket) Alignment")
5. Loosen set screws (2) from rear pillow block bearing collar.
6. Remove the rear bearing bolts, securing bearing to bearing mount. Remove bearing.
7. Replace by reversing ***Step #3 through Step #6***.
8. Adjust both lateral and vertical tumbler (basket) alignment.
9. Replace back guard.
10. Reestablish electrical power to the dryer.

To Replace Front Tumbler (Basket) Support Pillow Block Bearing

1. Discontinue electrical power to the dryer.
2. Remove back guard.
3. Follow ***Step #3 through Step #6*** from "Replacement of Rear Tumbler (Basket) Support Pillow Block Bearing."
4. Remove the two (2) retaining rings from the tumbler (basket) shaft.
5. Remove the two (2) bolts holding the front tumbler (basket) support pillow block bearing to the dryer.
6. Loosen bearing collar set screws (2) and as the end of the tumbler (basket) shaft is lifted up slightly, slide the bearing off the shaft.
7. Prop a block of wood between the tumbler (basket) shaft and the bearing to the dryer.
8. Replace by reversing ***Step #2 through Step #6***.

NOTE: Before replacing back guard, check tumbler (basket) lateral/vertical adjustment, as well as, belt adjustment and readjust if necessary.

9. Reestablish electrical power to the dryer.

To Replace Front Idler Shaft Pillow Block Bearing

(Bearing nearest the back of the dryer)

1. Discontinue electrical power to the dryer.
2. Remove V-belts from idler pulleys.
3. Remove bolts holding each idler pillow block bearing to mount.
4. Remove idler shaft (with both bearings and idler pulleys still attached) from dryer.
5. Remove end retaining ring and loosen the two (2) set screws in the bearing race collar.

6. Slide bearing off the shaft.

7. Replace bearing by reversing procedure.

8. Align idler pulley with tumbler (basket) pulley before tightening bolts.

9. Reestablish electrical power to the dryer.

To Replace Rear Idler Shaft Pillow Block Bearing

1. Follow ***Step #1 through Step #3*** from "To Replace Front Idler Shaft Bearing."

2. Remove retaining rings on each side of forward idler shaft pillow block bearing.

3. Loosen the two (2) set screws on each bearing collar.

4. Slide both bearings off the shaft.

5. Replace by reversing procedure.

6. Reestablish electrical power to the dryer.

I. V-BELTS (Refer to illustrations in section F "Pulleys")

V-belts should have proper tension. If too loose, they will slip, excessive wear on the bearings will result. If the pulleys are not properly aligned, excessive belt wear will result. Proper belt tension will allow 1/2" displacement under normal thumb pressure at mid span of belt.

NOTE: Belts ***must always be*** replaced in pairs (matched sets).

V-Belt Tension Adjustment (Tumbler [Basket] to Idler)

1. Discontinue electrical power to the dryer.

2. Back off jam nuts on idler adjustment belts.

3. Tighten belts by turning both bolts evenly clockwise (CW). (Turn counterclockwise [CCW] to loosen belts.)

4. Check vertical plane of idler pulley for parallel alignment with tumbler (basket) pulley.

5. If realignment is required, loosen tumbler (basket) pulley and bushing, and move tumbler (basket) pulley to proper position.

6. Retighten jam nuts.

7. Reestablish electrical power to the dryer.

V-Belt Tension Adjustment (Motor to Idler)

1. Discontinue electrical power to the dryer.
2. Loosen the nuts on the four (4) studs holding the drive motor mount to the back of the dryer.
3. Loosen the jam nuts on the adjustment screw on the top of the motor mount.
4. Turn the adjustment screw to lower the motor mount (to tighten the belts) or raise the motor mount (to loosen the belts).
5. Check the vertical plane of the motor pulley and idler pulley for parallel alignment.
6. If realignment is required, loosen motor pulley and bushing and move motor pulley to proper position.
7. Retighten motor mount bolts and jam nuts.
8. Reestablish electrical power to the dryer.

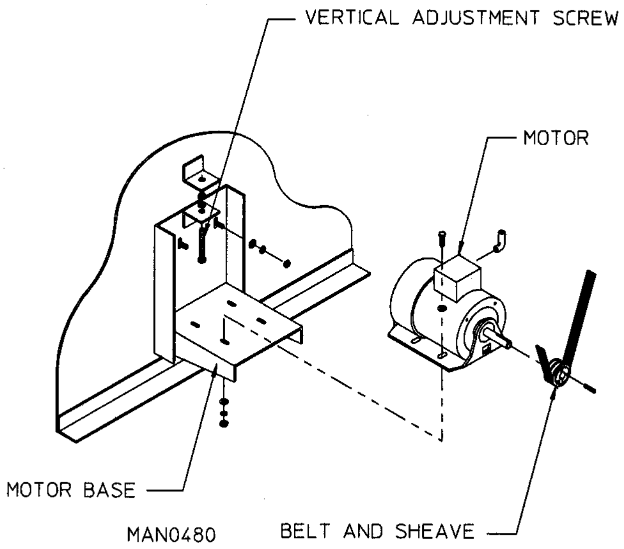
To Replace V-Belts

1. Loosen tension on V-belts so that they can easily be rolled off pulleys.
2. Replace V-belts.
3. Retighten V-belts and adjust tension and alignment per previous instructions.

NOTE: Always replace V-belts in pairs.

J. MOTORS

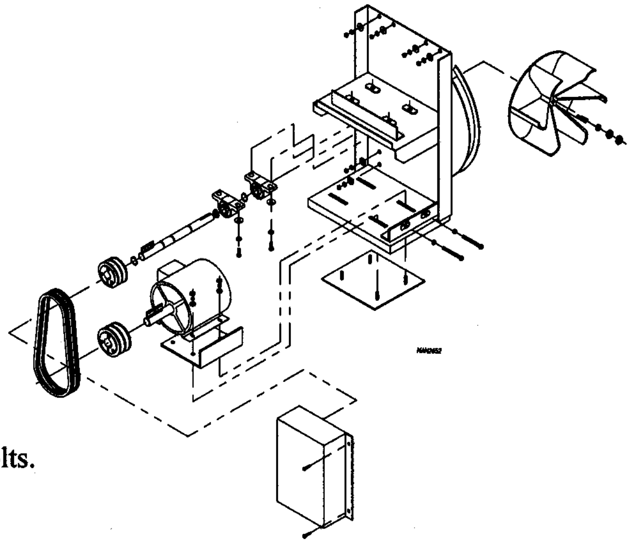
To Replace Drive Motor



1. Discontinue electrical power to the dryer.
2. Remove drive belts.
3. Disconnect wiring harness from motor.
4. Remove bolts holding motor to mount and replace with new motor. **DO NOT** tighten bolts.
5. Remove pulley from old motor and install on new motor.
6. Align motor pulley with idler pulley and align motor shaft with idler shaft and tighten bolts.
7. Replace belts and adjust belt tension.
8. Retighten bolts.

9. Reestablish electrical power to the dryer.

To Replace Impellor Motor (Fan Shaft Drive - Gas and Steam Models 50 & 60 Hz)



1. Discontinue electrical power to the dryer.
2. Remove drive belts.
3. Disconnect wiring harness from motor.
4. Remove bolts holding motor to mount and replace with new motor. **DO NOT** tighten bolts.
5. Remove pulley from old motor and install on new motor.
6. Align motor pulley with fan shaft pulley and tighten bolts.
7. Replace belts and adjust belt tension.
8. Retighten bolts.
9. Reestablish electrical power to the dryer.

K. IMPELLOR

1. Discontinue electrical power to the dryer.
2. Remove lint drawer.
3. Remove lint door.
4. Remove the two (2) left handed jam nuts that hold the impellor to the fan shaft.
5. Remove the impellor, washers, and the key.
6. If impellor is not sliding off, place two (2) 3/8" x 6" bolts into the two (2) tapped holes provided on inside of impellor and tighten.
7. Replace the impellor, key, washers, left handed jam nuts, and the side panel.
8. Reestablish electrical power to the dryer.

L. LINT DRAWER ASSEMBLY

To Replace Lint Screen

1. Pull out lint drawer.
2. Remove lint screen from lint drawer.
3. Drop new lint screen in place.
4. Slide lint drawer back into dryer.

To Replace Lint Drawer Switch

1. Disconnect electrical power to the dryer.
2. Remove lint drawer and lint door.
3. Disconnect both 4-pin connectors at the rear of the lint switch cover.
4. Remove the pal nut holding the lint switch cover on.
5. Remove lint switch cover and disconnect the two (2) terminals of the switch.
6. Remove switch by pressing tabs together and push switch out.
7. Install new switch by reversing procedure.

SECTION VI

TROUBLESHOOTING

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

The information provided will help isolate the most probable component(s) associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken/shorted wire may be at fault where electrical components are concerned...and not necessarily the suspected component itself.

IMPORTANT: When replacing blown fuses, the replacement ***must be*** of the exact rating as the fuse being replaced. The information provided ***should not be*** misconstrued as a handbook for use by an untrained person in making repairs.

WARNING: ALL SERVICE and TROUBLESHOOTING *SHOULD BE* PERFORMED BY A QUALIFIED PROFESSIONAL or SERVICE AGENCY.

WARNING: WHILE MAKING REPAIRS, OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE DRYER or SPECIFIED IN THIS MANUAL.

A. No L.E.D. (light emitting diode) display on microprocessor controller (computer)...

1. Open circuit breaker switch or blown fuse.
2. Tripped overload on the blower MTR.
3. Faulty wiring connection.
4. Faulty 24 V transformer.
5. "EMERGENCY STOP" (E-Stop) button is depressed.
6. Faulty microprocessor controller (computer).

B. Computer will not accept keyboard (touchpad) entries...

1. Keyboard (touchpad) ribbon is not plugged into computer securely.
2. Keyboard (touchpad) is defective.
3. Faulty microprocessor controller (computer).

C. Display is reading "Rotation Sensor Fail."

1. Magnet and rotation read switch are out of adjustment.
2. Trunnion shaft has moved forward.
3. Magnet is missing.
4. Rotation read switch is broken.
5. Broken V-belt.
6. Faulty drive motor.
7. Faulty wiring connection between read switch and computer.
8. Faulty drive contactor.
9. Faulty computer (computer is not sensing rotation).
10. Faulty arc suppressor (A.S.) board.

D. Display is reading "NO Airflow."

1. Blower motor is not coming on.
2. Blower motor is spinning in the wrong direction.
3. Dirty lint screen.
4. Exhaust is clogged and is in need of cleaning.
5. Sail switch damper is hung up.
6. Lint drawer or main door is not sealing.
7. Faulty sail switch (very tough).
8. Faulty wiring connection between sail switch and computer.
9. Faulty blower contactor.
10. Faulty arc suppressor (A.S.) board.
11. Faulty 24 V transformer.
12. Faulty computer board.

E. Display is reading "Sail Switch Fail."

1. Sail switch is out of adjustment.
2. Sail switch is hung up.
3. Customer has an exhaust booster fan that draws too much air.
4. Faulty wiring connection between computer and sail switch.
5. Faulty computer.

F. Display is reading "Drum Safety Fail"

1. Open tumbler (basket) hi-limit which is 225° F (107° C).
2. Faulty wiring connection between computer and tumbler (basket) hi-limit.
3. Faulty computer.

G. Display is reading "Burner Safety Fail."

1. Open burner hi-limit which is 330° F (166° C).
2. Faulty wiring connection between computer and oven hi-limit.
3. Faulty computer.

H. Display is reading "No Heat."

1. Faulty glo bar.
2. Faulty flame probe.
3. Faulty HSI (Hot Surface Ignition) module.
4. Gas is off.
5. Faulty gas valve.
6. Clogged burner tubes.
7. Erratic flames due to clogged exhaust.
8. Clogged lint screen.
9. Faulty wiring connection.
10. Faulty computer.

I. Display is reading "Burner Control Failure."

1. Faulty flame probe.
2. Faulty HSI (Hot Surface Ignition) module.
3. Faulty wiring connection between HSI module and gas valve or between gas valve and Phase 6 computer.
4. Faulty computer.

J. Display is reading "Burner Flame Failure."

1. Clogged lint screen.
2. Clogged exhaust.
3. Faulty HSI module.
4. Faulty gas valve.
5. Dirty burner tubes.

K. Display is reading "Main Door."

1. Faulty main door switch.
2. Faulty wiring connection between main door switch and Phase 6 computer.
3. Faulty computer.

L. Display is reading "Lint Door."

1. Faulty lint door switch.
2. Faulty wiring connection between lint drawer switch and Phase 6 computer.
3. Faulty computer.

M. Display is reading "Temp Sensor Fail Check Temp Sensor Fuse."

1. Blown 1/8 amp fuse on Phase 6 computer.
2. Faulty temperature sensor.
3. Faulty wiring connection between temp sensor and Phase 6 computer.
4. Faulty computer.

N. Display is reading "Hot."

1. Lint screen is dirty.
2. Exhaust is clogged.
3. Lint drawer is not closed **ALL** the way.
4. Faulty computer.
5. Faulty temp sensor.

O. Dryer operates but is taking too long to dry...

1. An inadequate exhaust duct work system.
2. Restriction in exhaust system.
3. Insufficient make-up air.
4. Poor housekeeping.
    a. Dirty or clogged lint screen.
5. Washing machine extractors are not performing properly.
6. An exceptionally cold/humid or low barometric pressure atmosphere.
7. The supply gas may have a low heating valve, check with local gas supplier.
8. Failed temperature sensor (temperature calibration is incorrect).
9. Failed microprocessor controller (computer).

P. Thermal overload for drive motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Bearing failure in drive system.
4. Motor vents are blocked with lint.
5. Failed motor.
6. Insufficient make-up air.

Q. Overload for impellor (fan) motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Motor vents are blocked with lint.
4. Failed motor.
5. Failed overload.
6. Out of balance impellor (fan).
7. Insufficient make-up air.

R. There is excessive vibration coming from the tumbler (basket)...

1. Tumbler (Basket) is out of adjustment.
2. Loose or broken tie rod.
3. Failed tumbler (basket) support.

SECTION VII

ELECTRICAL TROUBLESHOOTING

The information provided will help isolate the most probable components associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken or shorted wire may be at fault where electrical components are concerned...not necessarily the suspect component itself.

ELECTRICAL PARTS *SHOULD ALWAYS BE* CHECKED FOR FAILURE BEFORE BEING RETURNED TO THE FACTORY.

The information provided **should not be** misconstrued as a device for use by an untrained person in making repairs. Only properly licensed technicians should service the equipment.

OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE EQUIPMENT or SPECIFIED IN THIS MANUAL WHILE MAKING REPAIRS.

SECTION VIII

PHASE 6 OPL SYSTEM DIAGNOSTICS

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA (Occupational Safety and Health Administration) **STANDARDS.**

ALL major circuits, including door, microprocessor temperature sensor, heat and motor circuits are monitored. The Phase 6 OPL microprocessor controller (computer) will inform the user, via the L.E.D. (light emitting diode) display of certain failure codes, along with indicators both in L.E.D. (light emitting diode) display and at the output of each relay (and door switch circuit) to easily identify failures.

A. DIAGNOSTIC (L.E.D. [light emitting diode] DISPLAY) FAILURE CODES

1. **SAIL SWITCH FAIL** - This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is closed prior to start up the display will read "SAIL SWITCH FAIL" along with an audio indication.

2. **No AIRFLOW**- If the sail switch opens during cycle operation the display will read "No AIRFLOW" along with an audio indication. The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "No AIRFLOW" with an audio indication.

3. **bURNER SAFETY FAIL** - Routine monitors the temperature above the burner. If the burner hi-limit switch opens the display will read "bURNER SAFETY FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "bURNER SAFETY FAIL" with an audio indication.

4. **dRUM SAFETY FAIL** - This routine monitors the tumbler (basket) temperature if the tumbler (basket) hi-limit switch opens prior or during the cycle while the heat was on the machine will display "dRUM SAFETY FAIL." The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Upon failure the machine will shut down and display "dRUM SAFETY FAIL" with an audio indication.

5. **NoHEAT** - This routine monitors the gas valve response. If the valve output is discontinued by the ignition control while the heat output cycle is active the machine will display "NoHEAT" the machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler (basket) temperature is below 100° F (38° C) upon failure the machine will shut down and display "NoHEAT" with an audio indication.

6. **bURNER CONTRL FAIL** - This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the Phase 6 microprocessor controller (computer) determines the ignition control has failed. If this occurs when the cycle is active the machine will display "bURNER CONTRL FAIL." If the tumbler (basket) temperature is above 100° F (38° C) the machine will continue to display "bURNER CONTRL FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler (basket) temperature is below 100° F (38° C) upon failure the machine will shut down and display "bURNER CONTRL FAIL" with an audio indication.

7. **bURNER FLAME FAIL** - This routine allows two (2) flame out retries to occur before proceeding into the error. The count of two (2) will be established every time the call for heat was to occur. Only if it reaches the count of two (2) before the tumbler (basket) temperature has reached the set temperature will this error be triggered. The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler (basket) temperature is below 100° F (38° C) upon failure, the machine will shut down and display "bURNER FLAME FAIL" with an audio indication. This process will occur every time the heat output is active.

8. **MAIN dOOR** - This monitors the door circuit. If the machine was not active and the main door was opened the display would read "READY." If a program attempt was made with the main doors open the display will read "MAIN dOOR" with an audio indication. If the machine is active and the main door was opened the display would read "MAIN dOOR" with no audio indication and the dryer will shut down. Once the main door has closed the display would read "PRESS START" press the "ENTER/START" I key and it will continue the programmed cycle.

9. **LINT dOOR** - This monitors the lint drawer/door circuit. If the machine was not active and the lint drawer/door was opened the display would read "READY." If a program attempt was made with the lint drawer/door open the display would read "LINT dOOR" with an audio indication. If the machine was active and the lint drawer/door was opened the display would read "LINT dOOR" with no audio indication and the dryer will shut down. Once the lint door was closed the display would read "PRESS START" press the "ENTER/START" I key and it will continue the programmed cycle.

10. **TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE** - This routine monitors the tumbler (basket) temperature. When the temperature sensor or fuse opens with the machine not active the display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the machine was active at the time that the temperature sensor or fuse opened the display would read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE." If the tumbler (basket) temperature is above 100° F (38° C) the machine will continue to display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication and run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). If the tumbler (basket) temperature is below 100° F (38° C) upon failure the machine will shut down and display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. The display will continue to read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" an audio indication will sound for approximately 5 seconds, every 30 seconds until the problem is corrected or the power to the dryer is disconnected (and the problem is corrected).

NOTE: Once the Phase 6 microprocessor controller (computer) detects a problem in the heat circuit, it updates every 30 seconds, so that if the problem was a loose connection in the circuit which corrected itself, the "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" condition would automatically be cancelled and the display will return to "READY."

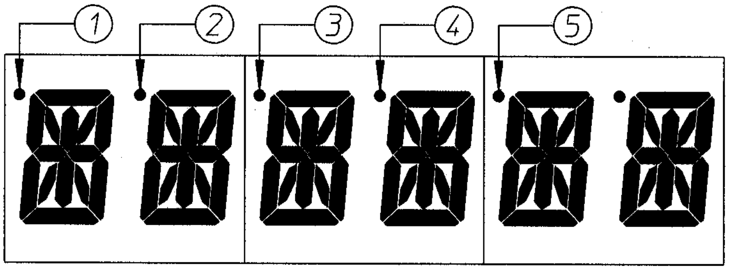
11. **ROTATE SENSOR FAIL** - Indicates a rotational sensor circuit failure meaning that there is a fault somewhere in the tumbler (basket) rotating circuit, or the Phase 6 OPL microprocessor controller (computer) program related to this circuit (Program Location 2) is set incorrectly. In the active mode it **should be** (ROTATE SENSOR ACTIVE), if the dryer is not equipped with the optional rotational sensor it **should be** set in the nonactive mode (No ROTATE SENSOR).

> **NOTE: RPM** - This routine monitors the timing response from the existing rotational sensor input and derives a RPM measurement. To display this RPM measurement (press the "ENTER/ START" ▯ key once and release, then press the "ENTER/START" ▯ key a second time and hold. This will display the RPM measurement). The rotational sensor ***must be*** active for operation of this feature.

12. **CHECK MAIN FUSE** - Indicates that the circuit fuse protection which is located on the back side of the Phase 6 microprocessor controller (computer) the display would read "CHECK MAIN FUSE." If the display continues after the fuse has been replaced then it is the fault of the Phase 6 microprocessor controller (computer).

B. L.E.D. (light emitting diode) DISPLAY INDICATORS

The L.E.D. (light emitting diode) indicator dots located on the top portion of the display indicates the various Phase 6 OPL computer output functions while a cycle is in progress. These indicator dots (as shown in the illustration below) **DO NOT** necessarily mean that the outputs are functioning. They are only indicating that the function output **should be** active (on).



1. **L.E.D. DISPLAY INDICATOR NUMBER 1**

    a. For Optional Reversing Models:

        1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the forward mode (clockwise [CW] direction).

2. **L.E.D. DISPLAY INDICATOR NUMBER 2**

    a. For Optional Reversing Models:

        1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the reverse mode (counterclockwise [CCW] direction).

3. **L.E.D. DISPLAY INDICATOR NUMBER 3**

    a. Heat Circuit Indicator:

        1) This indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating circuit to be active (on).

4. L.E.D. DISPLAY INDICATOR NUMBER 4

a. On Indicator:

1) This indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle program is active, the indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time program.

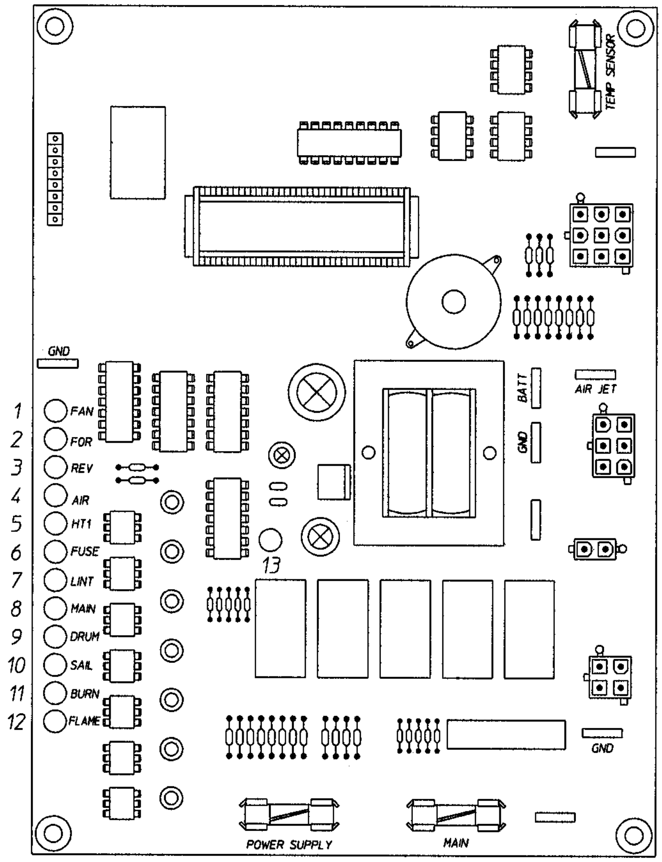
5. L.E.D. DISPLAY INDICATOR NUMBER 5

a. Air Jet Circuit Indicator - ***OPTIONAL***

1) This indicator dot is on at the end of the dryer cycle for approximately 60 seconds.

C. PHASE 6 OPL MICROPROCESSOR CONTROLLER (COMPUTER) RELAY OUTPUT L.E.D. (light emitting diode) INDICATORS

There are a series of five (5) L.E.D. indicators (ORANGE LIGHTS) located at the backside of the Phase 6 OPL microprocessor controller (computer). These are identified or labeled (from top to bottom in the illustration below as: FAN-BLOWER, FOR-FORWARD, REV-REVERSE, AIR-AIR-JET, HT1-HEAT OUTPUT. There are a series of seven (7) L.E.D. indicators (RED LIGHTS) FUSE-MAIN FUSE, LINT-LINT DOOR, MAIN-MAIN DOOR, DRUM-TUMBLER HI-LIMIT, SAIL-SAIL SWITCH, BURN-BURNER HI LIMIT, FLAME-FLAME PROBE). The L.E.D. in the center of the board (RED LIGHT) indicates power supplied to the Phase 6 OPL microprocessor controller (computer). These L.E.D.'s indicate the inputs and outputs of the Phase 6 OPL microprocessor controller (computer) as it monitors the safety circuits.



MAN3449

1. **"FAN" (BLOWER) Output L.E.D. (light emitting diode) Indicator**

    a. If the dryer is started and the blower motor is not operating, yet both the Phase 6 OPL microprocessor controller (computer) display fan indicator dot and power supply input L.E.D. are on, but the fan output L.E.D. is off, then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

        1) If the motor is not operating and the fan indicator dot and output L.E.D. are on, then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

2. **"FOR" (FORWARD) Output L.E.D. Indicator (for Optional Reversing Model ONLY)**

    a. If the dryer is started and the blower motor is operating, but the drive (tumbler [basket]) motor is not, yet the Phase 6 OPL microprocessor controller (computer) display "FORWARD" indicator dot is on, but the "FOR" (FORWARD) motor output L.E.D. is off; then the fault is the Phase 6 OPL microprocessor controller (computer) itself.

        1) If the drive tumbler (basket) motor is not operating and the forward indicator dot and output L.E.D. is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

3. **"REV" (REVERSE) Output L.E.D. Indicator (for Optional Reversing Models ONLY)**

    a. If the dryer is started and the blower motor is operating but the drive (tumbler/basket) motor is not, yet the Phase 6 OPL microprocessor controller (computer) displays "REVERSE" indicator dot is on but the "REV" (REVERSE) motor output L.E.D. is off; then the fault is of the Phase 6 OPL microprocessor controller (computer) itself.

        1) If the drive (tumbler/basket) motor is not operating and the reverse indicator dot and output L.E.D. is on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

4. **"AIR" (AIR JET) Output L.E.D. Indicator - *OPTIONAL***

    a. "AIR" is on with the display dot at the end of the dry cycle once the display reads "dONE," it is on for approximately 60-seconds and then the output L.E.D. indicator and the display dot go out. If the air jet does not energize it is not the fault of the Phase 6 OPL microprocessor controller (computer). If the output L.E.D. or dot **DO NOT** go on it is the fault of the Phase 6 OPL microprocessor controller (computer).

5. **"HT1" (HEAT) Output L.E.D. Indicator**

    a. If the dryer is started and there is "No Heat" yet the Phase 6 OPL microprocessor controller (computer) display heat circuit indicator dot is on, but the "HT1" output L.E.D. indicator is off; then the fault is in the Phase 6 OPL microprocessor controller (computer) itself.

        1) If the dryer is started and there is "No Heat" yet both the Phase 6 OPL microprocessor controller (computer) display indicator dots and the "HT1" output L.E.D. indicator are on; then the problem (fault) is elsewhere (i.e., external of the Phase 6 OPL microprocessor controller [computer]).

6. “FUSE” (MAIN FUSE) Input L.E.D. Indicator

a. **Should be** on **ALL** the time (even if the dryer is not running). If the L.E.D. (light emitting diode) is not on; then the display will read “CHECK MAIN FUSE.” If the main fuse is good then the fault is on the Phase 6 microprocessor controller (computer).

7. “LINT” (LINT DOOR) Input L.E.D. Indicator

a. **Should be** on **ALL** the time (unless the lint door is opened then the “LINT” L.E.D. indicator will go out).

b. If the dryer is active (running) and the lint door is opened the “LINT” L.E.D. indicator will go out and the display will read “LINT dOOR.” The dryer will stop until the Lint Drawer has been closed, at which time the L.E.D. display will read “PRESS START.” At this time, to resume the drying cycle press “ENTER/START” $\boxed{\text{I}}$ key.

8. “MAIN” (MAIN DOOR) Input L.E.D. Indicator

a. **Should be** on **ALL** the time (unless the lint door is open or the main door is opened then the “MAIN” L.E.D. indicator will go out).

b. If the dryer is active (running) and the main door is opened the “MAIN” L.E.D. indicator will go out and the display will read “MAIN dOOR.” The dryer will stop until the main door has been closed, at which time the L.E.D. display will read “PRESS START.” At this time, to resume the drying cycle press “ENTER/START” $\boxed{\text{I}}$ key.

9. “DRUM” (TUMBLER [BASKET] HI-LIMIT) Input L.E.D. Indicator

a. **Should be** on at **ALL** times (unless the tumbler [basket] hi-limit switch opens prior during the cycle while the heat was on the display would read “dRUM SAFETY FAIL”). The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying “dRUM SAFETY FAIL” with an audio indication.

10. “SAIL” (SAIL SWITCH) Input L.E.D. Indicator

a. This routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is in the closed position prior to start, the “SAIL” output L.E.D. indicator will be off, the machine will not start and the display will read “SAIL SWITCH FAIL” along with an audio indication.

b. If the sail switch opens during the cycle the “SAIL” output L.E.D. indicator will go out and the display will read “NO AIRFLOW.” The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C). Then the machine will shut down still displaying “NO AIRFLOW” along with an audio indication.

11. “BURN” (BURN HI-LIMIT) Input L.E.D. Indicator

a. This routine monitors the temperature of the burner. If the burner hi-limit opens during the cycle while the heat was on the “BURN” output L.E.D. indicator goes out and the display reads “bURNER SAFETY FAIL.” The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F (38° C) then the machine will shut down still displaying “bURNER SAFETY FAIL” with an audio indication.

12. "FLAME" (bURNER CONTROL FAIL) Input L.E.D. Indicator

a. This routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the microprocessor determines the ignition control has failed. If this occurs when the cycle is active the "FLAME" output L.E.D. (light emitting diode) indicator will go out and the display will read "bURNER CONTRL FAIL." The machine will run with no heat for three (3) minutes or until the temp drops below 100° F (38° C). Then the machine will shut down still displaying "bURNER CONTRL FAIL" with an audio indication.

13. "POWER SUPPLY" Input L.E.D. Indicator

a. **Should be** on at ALL times (even if the dryer is not running). The power supply L.E.D. (light emitting diode) output indicator will not be on if the power supply fuse to the Phase 6 OPL microprocessor is not present. If the power supply fuse is faulty the L.E.D. output will be off and there will be no display or keyboard (touchpad) function. The "FUSE," "LINT," and "DRUM" output L.E.D. indicators will remain on.

SECTION IX

L.E.D. DISPLAY/CODES

The L.E.D. (light emitting diode) display informs the operator of cycle status, program verification, and displays important diagnostic codes and fault codes.

A. L.E.D. DISPLAY OPERATING STATUS

1. Cycles in Progress

    a. While the dryer is operating, the L.E.D. display will read which cycle is in progress. For example, in Drying Cycle (Mode), the L.E.D. display will read "dRYING" and in the Cool Down Cycle (Mode) the L.E.D. display will read "COOL."

2. Cycle Status

    a. While a cycle is in progress, the L.E.D. display will show the progress of the cycle (load) that is being processed.

        1) Automatic Drying Cycle

            a) While a cycle is in progress the cycle status, elapse time and dRUM TEMP will be displayed with [PL5] FLASH active (NFLASH active the "ENTER/START" key **must be** pressed to display dRUM TEMP). Approximately half way through the drying cycle, the cycle status portion of the L.E.D. will display (i.e. dRY LEVEL 68 PcT). The display will change and count upward until the percentage of extraction programmed is reached.

        2) Timed (Manual) Drying Cycle

            a) While a cycle is in progress the cycle status, time remaining and dRUM TEMP will be displayed with [PL5] FLASH active (NFLASH active the "ENTER/START" key **must be** pressed to display dRUM TEMP).

3. Alternate Display Programs

    a. Programming allows for the L.E.D. display to read just the tumbler (basket) temperature or flash back and forth from Cycle in Progress or Tumbler (Basket) Temperature while the dryer cycle is in progress. Unless otherwise specified at the time of ordering the dryer, the Phase 6 OPL microprocessor controller (computer) is programmed not to flash and to read the Cycle in Progress.

NOTE: Refer to the illustration on the following page for details.

4. Indicator Dots (refer to **page 50**)

    a. Located at the top of the L.E.D. display is a series of dots which indicate the various Phase 6 OPL microprocessor controller (computer) output functions while a cycle is in progress.

1) Illustration No. 1

   a) **FORWARD INDICATOR** - this indicator dot is functional for dryer models with the Reversing Action Option ONLY. This indicator dot will be on when the tumbler (basket) is in the forward (clockwise [CW]) direction. Additionally, when the Anti-Wrinkle Program is active, this indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time Program (Mode).

2) Illustration No. 2 (refer to **illustration below**)

   a) **REVERSING INDICATOR** - this indicator dot is functional for dryer models with the Reversing Action Option ONLY. This indicator dot will be on when the tumbler (basket) is in the reverse (counterclockwise [CCW]) direction.

3) Illustration No. 3 (refer to **illustration below**)

   a) **HEAT INDICATOR** - this indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating unit to be active (on).

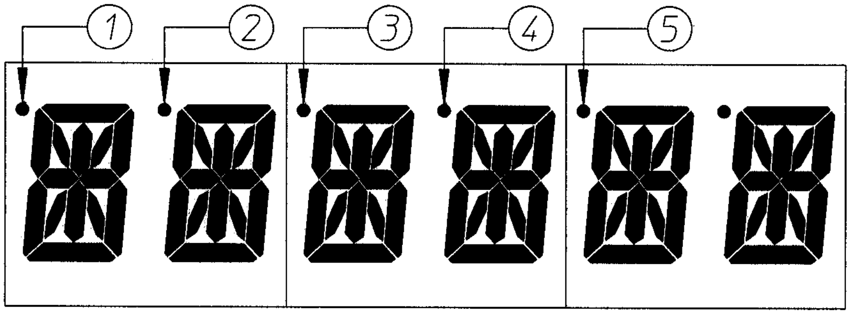
4) Illustration No. 4 (refer to **illustration below**)

   a) **ON INDICATOR** - this indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle Program is active, this indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time Program.

5) Illustration No. 5 (refer to **illustration below**) *OPTIONAL*

   a) **AIR JET CIRCUIT INDICATOR** - this indicator dot is on at the end of the drying cycle for approximately sixty (60) seconds.

B. PHASE 6 OPL MICROPROCESSOR L.E.D. DISPLAYS



MAN3450

1. Tumbler (Basket) in **FORWARD MODE** (clockwise [CW]) **INDICATOR**
2. Tumbler (Basket) in **REVERSE MODE** (counterclockwise [CCW]) **INDICATOR**
3. **HEAT ON INDICATOR**
4. **ON INDICATOR** (dryer is in operation mode)
5. **AIR JET INDICATOR** - *OPTIONAL*

C. L.E.D. CODES

1. Display Codes

A	SLOPE FACTOR
ALL REV	ALWAYS REVERSING
ANTI WRINKL dELAY TIME	ANTI-WRINKLE DELAY TIME
ANTI WRINKL GUARd ACTIVE	ANTI-WRINKLE PROGRAM ACTIVE
ANTI WRINKL GUARd ON TIME	ANTI-WRINKLE GUARD ON TIME
AUTO CYCLE	AUTOMATIC MODE
b	HEAT LOSS (OFF SET) FACTOR
bURNER CONTROL FAIL	GAS ONLY POWER (24 VAC) IS NOT EVIDENT AT GAS VALVE
bURNER FLAME FAIL	NO BURNER FLAME SENSED
bURNER SAFETY FAIL	GAS/ELECTRIC ONLY BURNER/OVEN OPEN HI-LIMIT CIRCUIT
bUZZ	BUZZER (TONE)
bUZZ TIME	BUZ TIME
CEL	DEGREE IN CELSIUS
CHECK MAIN FUSE	MAIN FUSE FAILURE
CLEAN LINT	PROMPT TO CLEAN LINT SCREEN, DRYER CYCLE LOCKOUT
COOL	COOL DOWN CYCLE IN PROGRESS
COOL TIME_M	COOL DOWN TIME
COOL TEMP_	COOL DOWN TEMPERATURE
CYCLEA	PREPROGRAMMED CYCLE A
CYCLEb	PREPROGRAMMED CYCLE B
CYCLEC	PREPROGRAMMED CYCLE C
CYCLED	PREPROGRAMMED CYCLE D
CYCLEE	PREPROGRAMMED CYCLE E
CYCLEF	PREPROGRAMMED CYCLE F
dONE	DRYING or COOLING CYCLE COMPLETE or DRYER IN ANTI-WRINKLE MODE
dRYING	DRYING CYCLE IN PROGRESS
dRY LEVEL_	DRYNESS LEVEL (PERCENTAGE OF EXTRACTION) (NUMERICAL VALUE)
dRY TEMP F_	DRYING TEMPERATURE
dRY TIME_M	LENGTH OF DRYING CYCLE
dRUM SAFETY FAIL	TUMBLER HI-LIMIT CIRCUIT IS OPEN
ELAPSE TIME_MIN	CYCLE DISPLAY TIME
ELECTRIC	SPECIFIC HEAT TYPE or DRYER ELECTRICALLY HEATED
F	FABRIC TEMPERATURE
FAR	DEGREE IN FAHRENHEIT
FLASH	FLASH DISPLAY ACTIVE
GAS	SPECIFIC HEAT TYPE OF DRYER GAS HEATED
HOT	INDICATES AN OVERHEAT CONDITION
LINT dOOR	LINT DRAWER/DOOR CIRCUIT IS OPEN OR FAULT IN THE A.C. SWITCH CIRCUIT
LINT COUNT	DRYING CYCLES RANGE FROM 1-10 CYCLES BEFORE CLEAN LINT DISPLAY
_M REMAIN	CYCLE DISPLAY TIME
MAIN dOOR	DOOR CIRCUIT IS OPEN or FAULT IN THE A.C. DOOR SWITCH CIRCUIT
MANUAL CYCLE	MANUAL MODE
MAX ANTI WRINKL GUARd	MAXIMUM GUARD TIME
NFLASH	FLASH DISPLAY NOT ACTIVE
NoAIRFLOW	SAIL SWITCH OPEN
NoANTI WRINKL GUARd	ANTI-WRINKLE PROGRAM IS NOT ACTIVE
NoBUZZ	NO BUZZER (TONE)
NoHEAT	GAS ONLY IGNITION ATTEMPT FAILURE
NoREV	NO REVERSE
No ROTATE SENSOR	NO ROTATIONAL SENSOR SELECTED
PROGRAM	PROGRAM MODE
REAdY	NO CYCLE IN PROGRESS
ROTATE SENSOR ACTIVE	ROTATIONAL SENSOR SELECTED
ROTATE SENSOR FAIL	ROTATIONAL SENSOR CIRCUIT FAILURE
_RPM	MONITORS TUMBLER RPM WITH ROTATIONAL SENSOR CIRCUIT ACTIVE
SAIL SWITCH FAIL	GAS/ELECTRIC ONLY ATTEMPT MADE TO START DRYER WITH SAIL SWITCH DISABLED IN CLOSED POSITION
SELREV	SELECT REVERSE
SPIN TIME	SPIN TIME
START GUARd	START ANTI-WRINKLE GUARD CYCLE
STEAM	SPECIFIC HEAT TYPE or DRYER STEAM HEATED
STOP TIME	STOP TIME
TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE	FAULT IN M.P. HEAT SENSING CIRCUIT

2. Fault Codes

bURNER CONTROL FAIL
- GAS MODELS ONLY POWER (24 VAC) IS NOT EVIDENT AT GAS VALVE

bURNER FLAME FAIL
- The Phase 6 Microprocessor Controller (Computer) DOES NOT SENSE FLAME VERIFICATION (GAS MODEL ONLY)

bURNER SAFETY FAIL
- GAS/ELECTRIC ONLY BURNER/OVEN OPEN HI-LIMIT CIRCUIT

dRUM SAFETY FAIL
- Fault in the TUMBLER (BASKET) HI-LIMIT CIRCUIT

HOT
- Indicates an OVERHEAT CONDITION

LINT dOOR
- When the LINT DOOR OR DRAWER is open or there is a **fault** in the LINT DOOR/DRAWER CIRCUIT

MAIN dOOR
- When the MAIN DOOR is open or there is a **fault** in the DOOR CIRCUIT

No AIRFLOW
- **Fault** in the SAIL SWITCH CIRCUIT (GAS/ELECTRIC MODELS ONLY)

No HEAT
- GAS ONLY IGNITION ATTEMPT FAILURE

ROTATE SENSOR FAIL
- **Fault** in the ROTATION SENSOR CIRCUIT

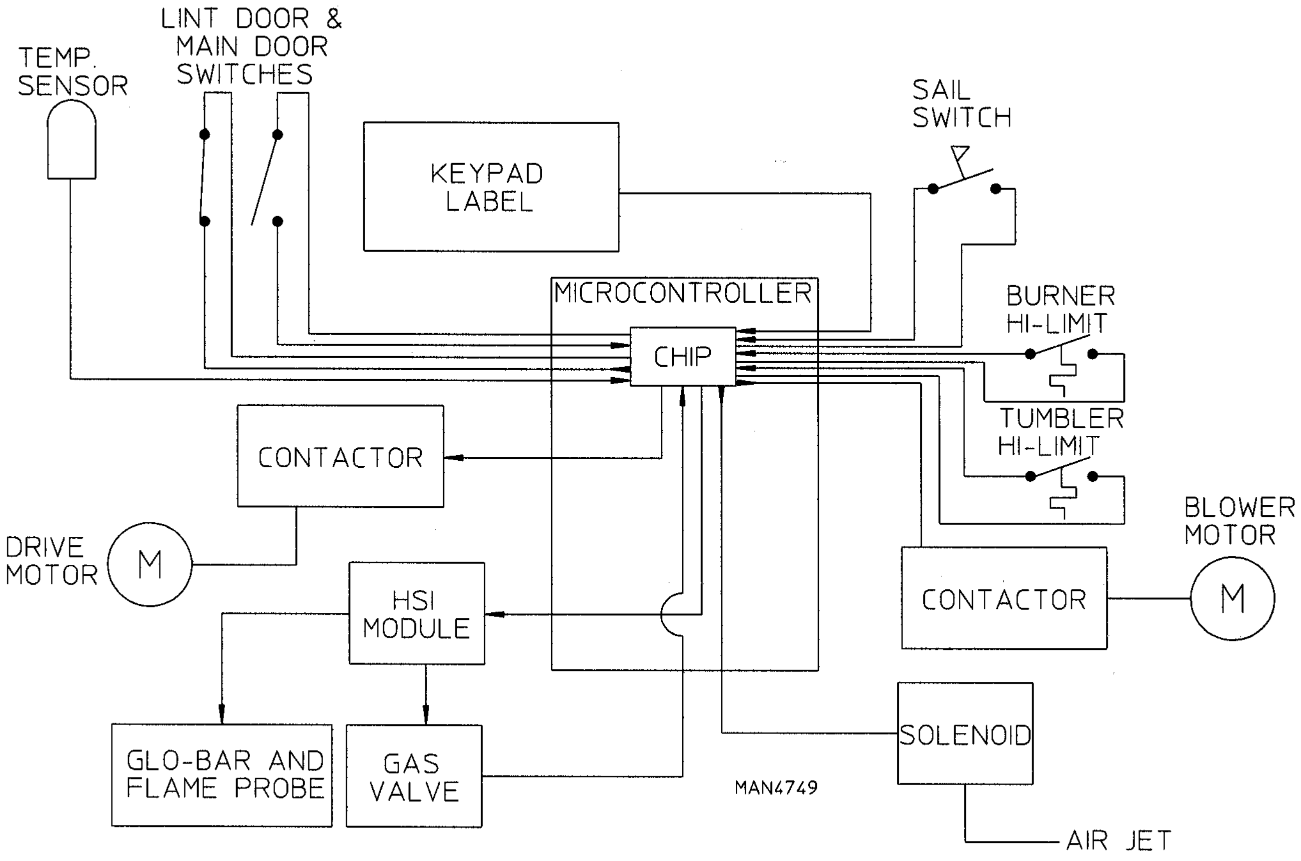
SAIL SWITCH FAIL
- **Fault** in the SAIL SWITCH CIRCUIT (GAS/ELECTRIC MODELS ONLY)

TEMP SENSOR CHECK TEMP SENSOR FUSE
- **Fault** in the MICROPROCESSOR TEMPERATURE SENSOR CIRCUIT

D. COMPUTER LOGIC and WIRING DIAGRAM

1. **Operator enters desired selection(s).**

COMPUTER LOGIC AND WIRING DIAGRAM


TEMP. SENSOR
LINT DOOR & MAIN DOOR SWITCHES
KEYPAD LABEL
SAIL SWITCH
MICROCONTROLLER
CHIP
BURNER HI-LIMIT
TUMBLER HI-LIMIT
CONTACTOR
DRIVE MOTOR
M
HSI MODULE
BLOWER MOTOR
CONTACTOR
M
SOLENOID
GLO-BAR AND FLAME PROBE
GAS VALVE
MAN4749
AIR JET

2. Information entered is sent to the microcontroller via the keyboard (touchpad).
3. The input information is sorted/processed and executed by the microcomputer chip.
4. The microcomputer output signal activates the contactors and HSI (Hot Surface Ignition) module which control machine functions.

> **NOTE:** When contacting **ADC** with electrical questions, please have on hand the correct wiring diagram number for your particular machine. This number is located on the top right-hand corner of the diagram. It is a six (6) digit number followed by a letter to distinguish the revision dates (refer to illustration).

The wiring diagrams used in Troubleshooting are specifically for dryers manufactured at the time of publishing. Your particular model may vary slightly depending on the date of manufacturing and options available. The correct wiring diagram and number is either taped to the rear of the control door on each dryer, or placed in the control box. If your particular diagram is lost or unreadable, call **ADC** with the serial number of the dryer. **ADC** will be more than happy to send you a diagram by fax or mail.

A. No Display Condition...

1. Check main fuses or circuit breaker.
2. Check blower motor overload...If tripped, reset.
3. Check fuse 1 or fuse 2 and if either are blown, replace.
4. Check to make sure "EMERGENCY STOP" (E-Stop) button is not depressed.
5. Across nos. 6 and 8 you **should be** getting your 208 V or 240 V. The J12 connector pin 1 and 3 you **should be** getting 24 V.

   If no voltage is present double check ***Step #1 through Step #4*** and also check wires and terminations at these points.

6. Take voltage reading across the microprocessor 9 pin connector nos. 1 and 2.

   If there is voltage, check the power supply fuse on the computer. If fuse is okay replace computer.

   If there is no voltage, there is a faulty wire(s) or termination(s) between the 9 pin J7 connector and the 9 pin J12 connector.

NOTE: In this next section ALL voltage checks ***must be*** done in the operating mode with the appropriate microprocessor dot on!! Also appropriate LED (light emitting diode) output light on!!

NOTE: In this next section when checking for voltage you are looking for 25 AC volts unless otherwise specified.

B. Drive motor reverses but does not go forward, blower motor runs...

1. If computer dot (first dot on the left) does not come on, replace the computer.
2. Check for voltage across the coil of the forward contactor located in the rear panel box. The contactor according to your diagram is marked CR2. The coil markings A1 and A2.

   If voltage is present, then the contactor is faulty.

   If no voltage is present, check voltage across the two (2) BS2 terminals of the arc suppressor (A.S.) board.

3. If there is no voltage, check voltage across the two (2) AS2 terminals.

   If there is voltage across the two (2) AS2 terminals and no voltage across the two (2) BS2 terminals, replace the arc suppressor (A.S.) board.

   If there is no voltage across the two (2) AS2 terminals on the arc suppressor (A.S.) board, the problem is a faulty wire(s) or termination(s) between the AS2 board and the 9 pin computer connector no. 8, or faulty computer.

C. Drive motor works in forward mode but does not reverse, blower motor runs...

1. If computer dot (second one from left) does not come on, check program to see if set for reverse.

2. If set for reverse, replace computer.

3. Check for voltage across the coil of the reversing contactor located in the rear panel box. The contactor according to your diagram is CR3, also the markings on the coil are A1 and A2.

   If there is voltage, replace the coil or the complete contactor.

   If there is no voltage, check for voltage across the two (2) BS3 terminals on the arc suppressor (A.S.) board.

   If there is voltage across the two (2) BS3 terminals and no voltage across the coil of the reversing contactor (A1 and A2), the problem is faulty wire(s) or termination(s) between BS3 and the contactor coil.

4. If there is no voltage between the two (2) BS3 terminals on the arc suppressor (A.S.) board, check for voltage across the two (2) AS3 terminals on the board.

   If there is voltage across the two (2) AS3 terminals and no voltage across the two (2) BS3 terminals, replace the arc suppressor (A.S.) board.

   If there is no voltage across the two (2) AS1 terminals, the problem is faulty wire(s) or termination(s) between the arc suppressor (A.S.) board and the computer 9 pin connector no. 9, or a faulty computer.

D. Blower motor does not operate, drive motor runs...

1. Check for voltage across terminals A1 and A2 of the impellor contactor. This is the single contactor in the rear control box.

   If voltage is present check for voltage across the blower motor. If there is voltage at the blower motor replace the motor.

   If there is no voltage at the blower motor, the problem is faulty wire(s) or termination(s) between the contactor and the motor.

2. If there is no voltage present at A1 and A2 of the contactor, check for voltage across the two (2) BS1 terminals of the arc suppressor (A.S.) board.

   If there is voltage present at the two (2) BS1 terminals, the problem is faulty wire(s) or termination(s) between the two (2) BS1 terminals and the coil (A1 and A2) terminals.

   If there is no voltage across the two (2) BS1 terminals, check for voltage across the two (2) AS1 terminals.

   If there is voltage across the two (2) AS1 terminals and there is no voltage between the two (2) BS1 terminals, replace the arc suppressor (A.S.) board.

3. If there is no voltage across the two (2) AS1 terminals, the problem is faulty wire(s) or termination(s) between the two (2) AS1 terminals and the computer board 9 pin connector no. 7, or a faulty computer.

E. "No Heat" Drive and Blower Motors Run (Gas Models)...

1. Check for voltage across L1 and GND of the HSI module.

   If no voltage is present, then check for voltage from terminal #14 on the blower contactor to ground.

   If no voltage is present, the problem is with blower contactor.

   If voltage is present, the problem is faulty wire or termination between blower contactor and HSI module.

2. If voltage is present, check for voltage across terminal "W" and "GND" of the HSI module.

   If voltage is present, the problem is faulty HSI module.

   If no voltage is present, then check voltage at J10 6 pin connector on the Phase 6 computer.

   If voltage is present, the problem is faulty wire or terminal between HSI module and Phase 6 computer.

   If voltage is not present, then there is a possible problem in the safety circuits (if this is the case the computer **should be** displaying an error code). If this is not the case than the Phase 6 computer is faulty.

F. "No Heat" Drive and Blower Motors Run (Steam Models)...

1. Check for voltage across pin #3 and #4 of the J13 6 pin connector.

   If voltage is present, the problem is faulty steam damper solenoid.

   If no voltage is present, check for voltage across pin 3 and 4 of the J12 9 pin connector.

   If voltage is present, the problem is faulty wire or termination between J12 connector and J13 connector.

   If no voltage is present, check for voltage across pin 1 and 2 of the J6 4 pin connector.

   If voltage is present, the problem is faulty wire or terminal between the J6 4 pin connector and J12 9 pin connector.

   If no voltage is present, check for voltage between pin 5 of the J10 connector and ground.

   If voltage is present, the problem is faulty wire or terminal between J1 and J6 connector.

   If no voltage is present, check for voltage across pin 4 of the J10 connector and ground.

   If voltage is present, the problem is faulty computer board.

   If no voltage is present, check for voltage between pin 1 of the J10 connector and ground.

   If voltage is present, the problem is fault wire or termination between pin 1 and 4 of the J10 connector.

   If no voltage is present, the problem is faulty computer.

G. "Door" Condition

NOTE: Make sure main door is closed. Also, if checking either switch, the plunger ***must be*** depressed.

1. Check L.E.D. (light emitting diode) input light "door" on the component side of the computer. If the light is on, replace the computer.

2. Check voltage (24 VAC) between pin 5 and ground of the J7 9 pin connector.

   If no voltage is present, the problem is faulty computer.

   If voltage is present, check for voltage between pin 6 and ground of the J7 9 pin connector.

   If no voltage is present, the problem is faulty wire or termination in the door switch circuit.

   If voltage is evident, the problem is faulty computer.

H. Microprocessor (Computer) reads "Temp Sensor Failure Check Temp Sensor Fuse"

NOTE: Before continuing with this section check the .125 MA fuse on the compute board.

1. Replace the temperature sensor underneath the tumbler (basket) on a bracket (the bullet shaped device).

2. If it still displays the error code, unplug the 4 pin connector from the temperature sensor bracket. Also, unplug the microprocessor 15 pin connector from the computer board. Where the white/red striped wire is going into the connector, take a continuity reading across the wire and that same wire from the 4 pin connector that you unplugged earlier in this paragraph.

   If there is no continuity, check for break in wire, a short to the ground, loose termination(s), or even replace the wire.

   If there is continuity, do the same thing to the black wire right next to the white/red striped wire in the 15 pin connector.

   If there is no continuity, check for break in wire, a short to ground, loose termination(s), or even replace the wire.

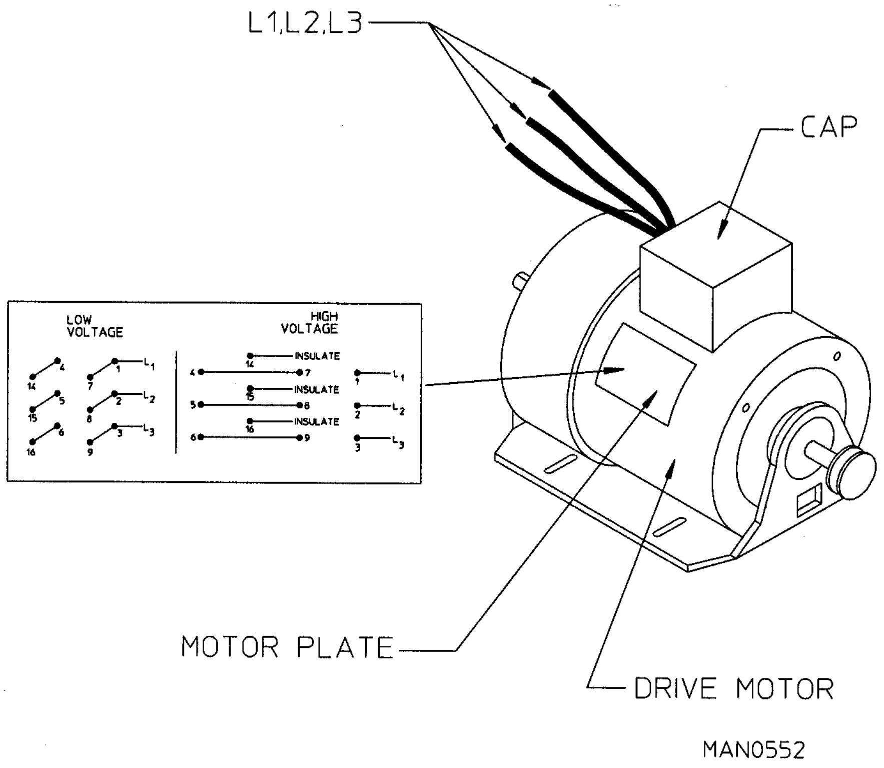
   If there is continuity, computer board is faulty.

SECTION X

TECHNICAL INFORMATION

The following section contains various technical information important to the service person in servicing and maintaining the dryer.

A. MOTOR PLATE (HIGH and LOW VOLTAGE)


L1,L2,L3
CAP
LOW VOLTAGE
4
14
1
L1
7
5
15
2
L2
8
6
16
3
L3
9
HIGH VOLTAGE
INSULATE
14
4
7
1
L1
INSULATE
15
5
8
2
L2
INSULATE
16
6
9
3
L3
MOTOR PLATE
DRIVE MOTOR
MAN0552

The motor plate is located on the side of the drive motor (refer to illustration) and contains a graphical representation of the motor wiring for both low voltage rating and high voltage rating.

Removing the cap reveals the wiring to the motor. On each wire there is a number which corresponds to the numbers on the motor plate. Depending on whether the dryer is operating on low voltage or high voltage, the wiring should match the motor plate as follows:

The dots and lines represent connections (refer to illustration).

For example:

On low voltage - wire no. 14 is connected to wire no. 4

- wire no. 1 is connected to wire no. 7, which in turn are both connected to L1

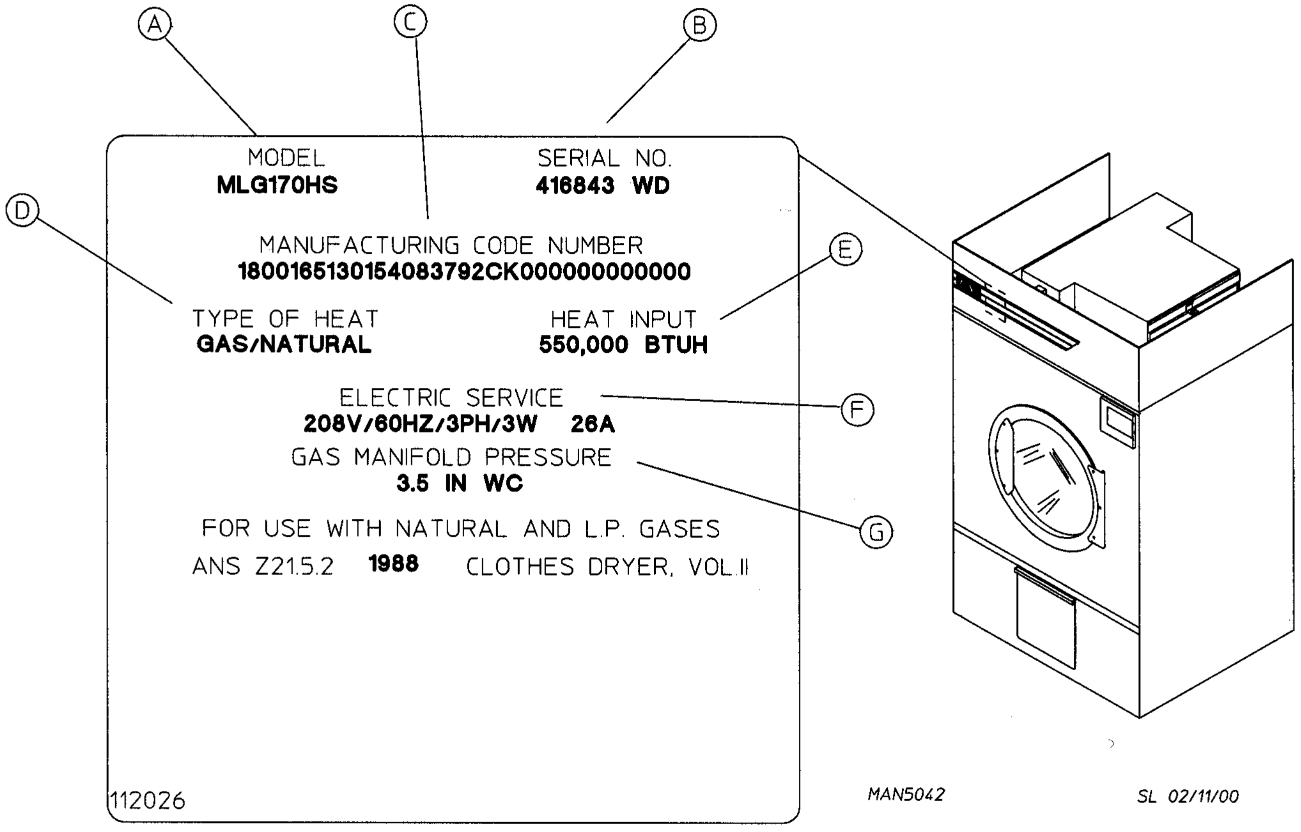
On high voltage - wire no. 14 is insulated or capped

- wire no. 4 is connected to wire no. 7

- wire no. 1 is connected to L1

B. DATA LABEL

Contacting **American Dryer Corporation (ADC)**


A
C
B
D
E
F
G
MODEL
MLG170HS
SERIAL NO.
416843 WD
MANUFACTURING CODE NUMBER
18001651301540837 92CK000000000000
TYPE OF HEAT
GAS/NATURAL
HEAT INPUT
550,000 BTUH
ELECTRIC SERVICE
208V/60HZ/3PH/3W 26A
GAS MANIFOLD PRESSURE
3.5 IN WC
FOR USE WITH NATURAL AND L.P. GASES
ANS Z21.5.2 1988 CLOTHES DRYER, VOL.II
112026
MAN5042
SL 02/11/00

When contacting **ADC**, certain information is required to insure proper service/parts information. This information is on the data label, located on the top right corner of the dryer, viewed from the rear (refer to illustration). When contacting **ADC**, please have the **model number** and **serial number** readily accessible.

Information on the Data Label

a. Model number - The model number is an **ADC** number which describes the size of the dryer and the type of heat (gas or steam).

b. Serial number - The serial number allows **ADC** to gather information on your particular dryer.

c. Manufacturing code number - The manufacturing code number is a number issued by **ADC** which describes **ALL** possible options on your particular model.

d. Type of heat - Describes the type of heat; gas (natural or L.P. [liquid propane]), steam or electric.

e. Heat input - (For gas dryers) describes the heat input in British Thermal Units.

f. Electric service - Describes the electric service for your particular models.

g. Gas manifold pressure - Describe the manifold pressure as taken at the gas valve pressure tap (refer to "Using a Manometer").

C. USING A MANOMETER

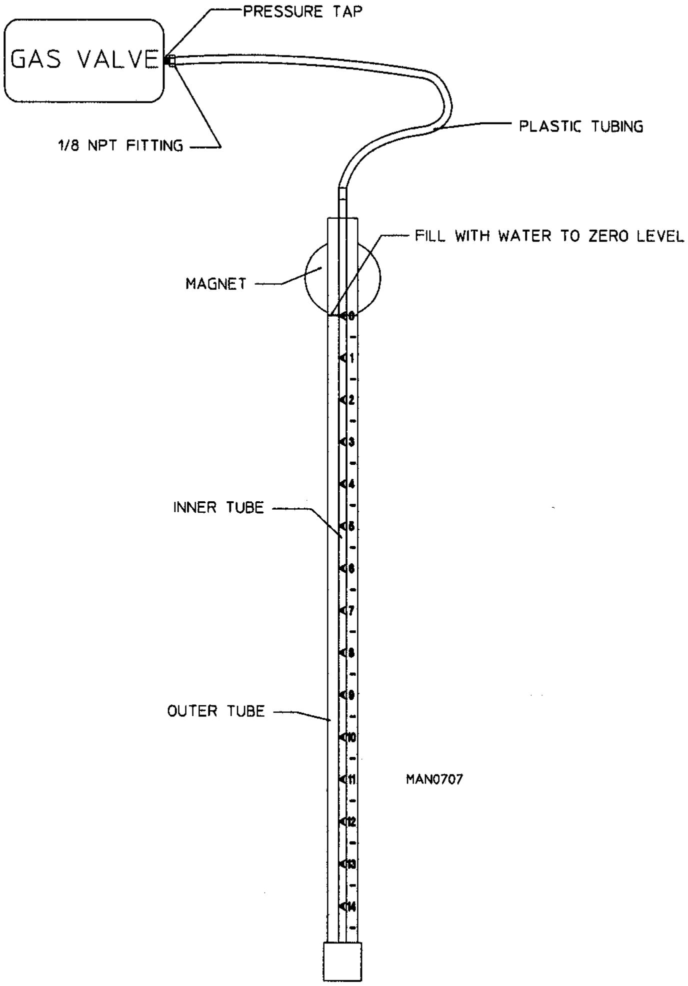
How to Use a Manometer

1. With dryer in nonoperating mode, remove plug on the gas valve pressure tap.
2. Attach plastic tubing to pressure tap. Fitting is supplied with manometer (refer to illustration).
3. Attach manometer to dryer using magnet.

NOTE: Place manometer in a position so that readings can be taken at eye level.

4. Fill manometer with water, as shown in illustration to the zero level.
5. Start dryer. With burner on, take a reading.
   - a. Read water level at the inner tube. Readings **should be** taken at eye level.
   - b. Correct readings **should be**:

     NATURAL GAS: 3.5 inches W.C. (8.7 mb).
     L.P. GAS: 10.5 inches W.C. (26.1 mb).
6. If water column pressure is incorrect refer to "TO ADJUST GAS PRESSURE."
7. Reverse procedure for removing manometer.


PRESSURE TAP
GAS VALVE
PLASTIC TUBING
1/8 NPT FITTING
FILL WITH WATER TO ZERO LEVEL
MAGNET
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
INNER TUBE
OUTER TUBE
MAN0707

D. ML-170 TOOL LIST

Straight Head Screwdriver

Phillips Head Screwdriver

Sensor Pin and Socket Tool (P/N 122801)

Pliers

1/4" Nut Driver

3/8" Open End Wrench

5/8" Open End Wrench

5/8" Deep Socket Wrench

3/8" Socket Wrench

1/2" Socket or Open End Wrench

1/4" Open End Wrench

5/16" Socket or Open End Wrench

1/2" Socket Wrench

7/16" Socket or Open End Wrench

5/16" Nut Driver

12" Pipe Wrench (2)

1/8" "T" Shaped or "L" Shaped Allen Wrench

3/16" "T" Shaped or "L" Shaped Allen Wrench

Wire Cutters

1/2" Allen Wrench

3/8" Allen Wrench

Channel Locks

Manometer (**ADC** P/N 122804)

MP Pin Extraction Tool (**ADC** P/N 122800)

ML-175 Table of Contents

SECTION I

IMPORTANT INFORMATION 3
A. Safety Precautions 3

SECTION II

ROUTINE MAINTENANCE 5
A. Cleaning 5
B. Adjustments 6
C. Lubrication 6

SECTION III

INSTALLATION REQUIREMENTS 7
A. Enclosure, Air Supply, and Exhaust Requirements 7
B. Electrical and Gas Requirements 7
C. Operational Service Check Procedure 8

SECTION IV

DESCRIPTION OF PARTS 10
A. Control Panel (Microprocessor) 10
B. Control Box 10
C. HSI Module (Gas Models Only) 10
D. Gas Burner Assembly 11
E. Drive Motor 11
F. Blower Motor and Impellor (Gas and Steam) 11
G. Speed Reducing Shaft 12
H. Tumbler (Basket) Bearing Arrangement 12
I. Tumbler (Basket) 12
J. Main Door Switch 13
K. Sail Switch (Gas Models Only) 13
L. Hi-Limit (Gas Models Only) 13
M. Manual Reset Thermostat 14
N. Lint Drawer 14
O. Lint Drawer Switch 14
P. Steam Damper System 15
Q. Compressed Air Requirements 15

SECTION V
SERVICING 16
A. Computer Controls 17
B. Ignition Controls 18
C. Thermostats 21
D. Sail Switch Assembly (Gas Models Only) 23
E. Front Panel and Main Door Assemblies 23
F. Pulleys 25
G. Tumbler (Basket) Alignment 28
H. Bearings 29
I. Basket and Support 33
J. V-Belts 33
K. Motors 35
L. Impellor 36
M. Lint Drawer Assembly 36

SECTION VI
TROUBLESHOOTING 38

SECTION VII
ELECTRICAL TROUBLESHOOTING 42

SECTION VIII
PHASE 6 OPL SYSTEM DIAGNOSTICS 43
A. Diagnostic (L.E.D. [light emitting diode] Display) Failure Codes 43
B. L.E.D. (light emitting diode) Display Indicators 45
C. Phase 6 OPL Microprocessor Controller Relay Output L.E.D. (light emitting diode) Indicators ... 46

SECTION IX
L.E.D. DISPLAY/CODES 47
A. L.E.D. (light emitting diode) Display Operating Status 47
B. Phase 6 OPL Microprocessor L.E.D. (light emitting diode) Displays 48
C. L.E.D. Codes 49
D. Computer Logic and Wiring Diagram 50

SECTION X
TECHNICAL INFORMATION 56
A. Motor Plate (High and Low Voltage) 56
B. Data Label 57
C. Using a Manometer 58
D. Tool List 59

SECTION I

IMPORTANT INFORMATION

A. SAFETY PRECAUTIONS

1. **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

2. Purchaser/user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions **should be** posted in a prominent location.

3. Dryer **must be** exhausted to the outdoors.

4. Although **ADC's** dryer is a very versatile machine, there are some articles, that due to fabric composition or cleaning method, **should not be** dried in it.

WARNING: Dry only water-washed fabrics. ***DO NOT*** dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "all purpose" cleaners.
FIRE or EXPLOSION COULD RESULT.

WARNING: ***DO NOT*** dry rags or articles coated with gasoline, kerosene, paint, or wax.

WARNING: ***DO NOT*** dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

WARNING: ***DO NOT*** use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubberlike materials. Drying in a heated tumbler (basket) may damage plastic or rubber and also may be a fire hazard.

5. A program **should be** established for the inspection and cleaning of lint in the burner area and exhaust duct work. The frequency of cleaning can best be determined from experience at each location.

WARNING: The collection of lint in the burner area and exhaust duct work can create a potential fire hazard.

6. For personal safety, the dryer **must be** electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA No. 70-LATEST EDITION.

NOTE: Failure to do so will VOID THE WARRANTY.

7. **UNDER NO CIRCUMSTANCES** should the dryer door or lint drawer switch(es) or heat safety devices ever be disabled.

WARNING: PERSONAL INJURY or FIRE COULD RESULT.

8. Articles **should never be** left unattended for an extended period of time in the tumbler (basket) after completion of the drying and cooling cycles.

WARNING: ARTICLES LEFT IN THE DRYER AFTER THE DRYING and COOLING CYCLES HAVE BEEN COMPLETED CAN CREATE A FIRE HAZARD.

9. This dryer is not to be used in the presence of dry cleaning solvents or fumes.

10. Read and follow **ALL** caution and direction labels attached to the dryer.

WARNING: CHILDREN ***SHOULD NOT BE*** ALLOWED TO PLAY ON or IN THE DRYER(S). CHILDREN ***SHOULD BE*** SUPERVISED IF NEAR DRYER(S) IN OPERATION.

11. **DO NOT** operate dryers with more than 125 PSI steam pressure. Excessive steam pressure can damage steam coil and/or harm personnel.

12. Replace leaking flexible steam hoses or other steam fixtures immediately. **DO NOT** operate dryer with leaking flexible hoses. Personal injury may result.

SECTION II

ROUTINE MAINTENANCE

A. CLEANING

A program and/or schedule **should be** established for periodic inspection, cleaning, and removal of lint from various areas of the dryer, as well as throughout the duct work system. The frequency of cleaning can best be determined from experience at each location. Maximum operating efficiency is dependent upon proper air circulation. The accumulation of lint can restrict this airflow. If the guidelines in this section are met, an **ADC** dryer will provide many years of efficient, trouble free, and – most importantly – safe operation.

WARNING: LINT FROM MOST FABRICS IS HIGHLY COMBUSTIBLE. THE ACCUMULATION OF LINT CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: KEEP DRYER AREA CLEAR and FREE FROM COMBUSTIBLE MATERIALS, GASOLINE, and OTHER FLAMMABLE VAPORS and LIQUIDS.

NOTE: Suggested time intervals shown for average usage which is considered six (6) to eight (8) operational (running) hours per day.

Clean lint drawer/screen every third or fourth load.

NOTE: Frequency can best be determined at each location.

DAILY
(beginning) of each work shift.

Clean lint from the drawer/screen. Inspect lint screen and replace if torn.

WEEKLY

Clean lint accumulation from lint chamber, thermostat, and microprocessor temperature sensor (sensor bracket) area.

WARNING: To avoid the hazard of electrical shock, discontinue electrical supply to dryer.

STEAM DRYERS

Clean steam coil fins using compressed air and a vacuum cleaner with brush attachment.

NOTE: When cleaning steam coil fins, be careful not to bend the fins. If fins are bent, straighten by using a fin comb which is available from local air conditioning supply houses.

90 DAYS

Remove lint from tumbler (basket), drive motors, and surrounding areas. Remove lint from gas valve burner area with a dusting brush or vacuum cleaner attachment.

NOTE: To prevent damage, avoid cleaning and/or touching ignitor/flame-probe assembly.

Remove lint accumulation from inside control box and at rear area behind control box.

6 MONTHS

Inspect and remove lint accumulation in customer furnished exhaust duct work system and from dryer's internal exhaust ducting.

WARNING: THE ACCUMULATION OF LINT IN THE EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: *DO NOT* OBSTRUCT THE FLOW OF COMBUSTION and VENTILATION AIR. CHECK CUSTOMER FURNISHED BACK DRAFT DAMPER IN EXHAUST DUCT WORK. INSPECT and REMOVE ANY LINT ACCUMULATION WHICH CAN CAUSE DAMPER TO BIND or STICK.

NOTE: A back draft damper that is sticking partially closed can result in slow drying and shut down of the heat circuit safety switches or thermostats.

NOTE: When cleaning dryer cabinet(s), avoid using harsh abrasives. A product intended for the cleaning of appliances is recommended.

B. ADJUSTMENTS

7 DAYS AFTER INSTALLATION and EVERY 6 MONTHS

Inspect bolts, nuts, screws, (bearing set screws), nonpermanent gas connections (unions, shut-off valves, orifices, and grounding connections). Motor and drive belts **should be** examined. Cracked or seriously frayed belts **should be** replaced. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of **ALL** safety devices (door switch, lint drawer switch, sail switch, burner and hi-limit thermostats).

C. LUBRICATION

The motor bearings, idler bearings...and under normal/most conditions the tumbler bearings are permanently lubricated. It is physically possible to re-lubricate the tumbler bearings if you choose to do so even though this practice *is not necessary.* Use Shell Alvania #3 or its equivalent. The tumbler bearings used in the dryer **DO NOT HAVE** a great fitting. Provisions are made in the bearing housing for the addition of a grease fitting which can be obtained elsewhere, or from **ADC** by ordering kit Part No. 882159, which includes two (2) fittings.

SECTION III

INSTALLATION REQUIREMENTS

Installation **should be** performed by competent technicians in accordance with local and state codes. In the absence of these codes, installation **must conform** to applicable AMERICAN NATIONAL STANDARDS:

ANSI Z223.1-LATEST EDITION National Fuel Gas Code
and/or
ANSI/NFPA No. 70-LATEST EDITION National Electrical Code

A. ENCLOSURE, AIR SUPPLY, and EXHAUST REQUIREMENTS

NOTE: The following information is very brief and general. For detailed description, refer to the "ML-175 Installation Manual" (**ADC** P/N 113070).

Bulkheads and partitions around the dryer **should be** made of noncombustible materials. Allowances **should be** made for the opening and closing of the control door and lint drawer. Also, allowances **should be** made in the rear for ease of maintenance. (Refer to appropriate Installation Manual for recommended distances and minimum allowances required.)

When the dryer is operating, it draws in room air, heats it, passes this air through the tumbler (basket), and exhausts it out of the building. Therefore, the room air **must be** continually replenished from the outdoors. If the make-up air is inadequate, drying time and drying efficiency will be adversely affected. Ignition problems and sail switch "fluttering" problems on gas dryers may result, and you also could have premature motor failure from overheating. The air supply **must be** given careful consideration to insure proper performance of each dryer.

IMPORTANT: Make-up air ***must be*** provided from a source free of dry cleaning fumes. Make-up air that is contaminated by dry cleaning fumes will result in irreparable damage to motors and other dryer components.

Exhaust duct work **should be** designed and installed by a competent technician. Improperly sized duct work will create excessive back pressure which will result in slow drying, increased use of energy, and shut down of the burner by the airflow (sail) switch, burner hi-limit or lint chamber hi-heat protector thermostat. (Refer to appropriate Installation Manual for more details.)

CAUTION: IMPROPERLY SIZED or INSTALLED EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

B. ELECTRICAL and GAS REQUIREMENTS

It is your responsibility to have **ALL** electrical connections made by a properly licensed and competent electrician to assure that the electrical installation is adequate and conforms with local and state regulations or codes. In the absence of such codes, **ALL** electrical connections, material, and workmanship **must conform** to the applicable requirements of the National Electrical Code ANSI/NFPA No. 70-LATEST EDITION.

IMPORTANT: Failure to comply with these codes or ordinances and/or the requirements stipulated in this manual can result in personal injury or component failure.

The gas dryer installation **must meet** the AMERICAN NATIONAL STANDARD, NATIONAL FUEL GAS CODE ANSI Z223.1-LATEST EDITION, as well as, local codes and ordinances, and **must be** done by a qualified technician.

NOTE: Undersized gas piping will result in ignition problems and slow drying and can create a safety hazard.

The dryer **must be** connected to the type of gas (natural or L.P.) indicated on the dryer data label. If this information does not agree with the type of gas available, contact the distributor who sold the dryer or contact the factory.

The gas input ratings shown on the dryer data label are for elevations up to 2,000 feet, unless elevation requirements of over 2,000 feet were specified at the time the dryer order was placed with the factory. The adjustment for dryers in the field for elevations over 2,000 feet are made by changing the burner orifices. If this adjustment is necessary, contact the distributor who sold the dryer or contact the factory.

NOTE: Any burner changes ***must be*** made by a qualified technician.

C. OPERATIONAL SERVICE CHECK PROCEDURE

1. Turn on electric power to the dryer.
2. To start dryer:
    a. Display will read “READY.”
    b. Press “E” on the keyboard (touchpad) of microprocessor controller (computer).
    c. The dryer will start, and the display will show “Drying Manual Cycle E,” “Dry Temp _,” “Cool Temp_,” “30 Min Remain.”

NOTE: Pressing keyboard (touchpad) “A,” “B,” “C,” “D,” and “F” will also start the dryer. Six (6) preprogrammed drying cycles (“A” through “F”) have been stored in the computer’s memory. (Refer to Computer Operator’s Manual for details.)

3. Make a complete operational check of **ALL** the operating controls to assure that the timing is correct, temperature selection switches are functioning, etc.
4. Make a complete operational check of **ALL** safety-related circuits: door switch(es), hi-limit thermostat, sail switch, cycling thermostats, etc.
5. For gas dryers a gas pressure test **should be** taken at the gas valve pressure tap of each dryer to assure that the water column pressure is correct and consistent.

NOTE: Water column pressure requirements (measured at the pressure tap on the gas valve body):

Natural Gas - 3.5 Inches Water Column.
L.P. Gas - 10.5 Inches Water Column.

6. If computer program changes are required, refer to the Phase 6 OPL Operator's Manual (**ADC** Part No. 113022) for details.

7. The dryer **should be** operated through one complete cycle to assure that no further adjustments are necessary and that **ALL** components are functioning properly.

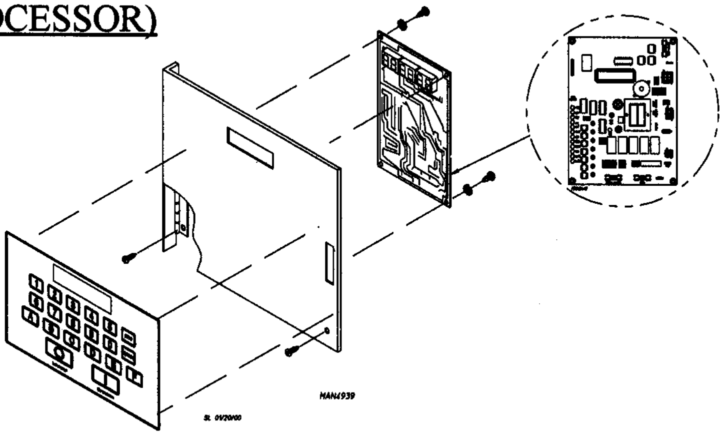
8. Check the electric service phase sequence. While the dryer is operating, check to see if the blower wheel is rotating in the proper direction. Looking from the front, the blower wheel should spin in the clockwise (CW) direction. If so, the phasing is correct. If the phasing is incorrect, reverse two (2) leads at connections L1, L2, or L3 of power supply to the dryer.

SECTION IV

DESCRIPTION OF PARTS

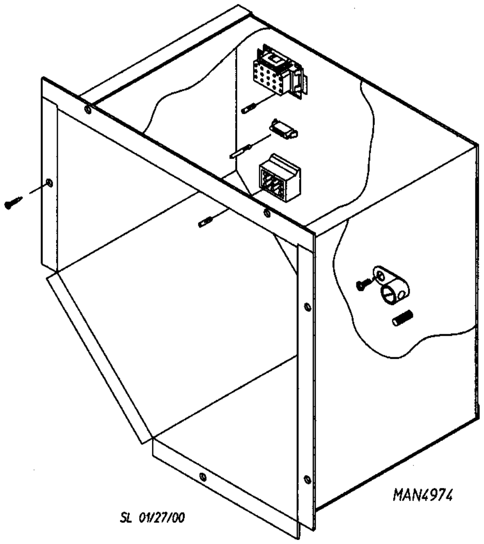
A. CONTROL PANEL (MICROPROCESSOR)

Lifting the control door will reveal the control panel assembly. Opening the control panel will allow access to the major components which include the computer board and keyboard (touchpad). The keyboard (touchpad) inputs to the computer what temperature and program has been selected. The computer controls the entire operation of the machine. It accepts inputs and gives outputs to various parts throughout the machine.



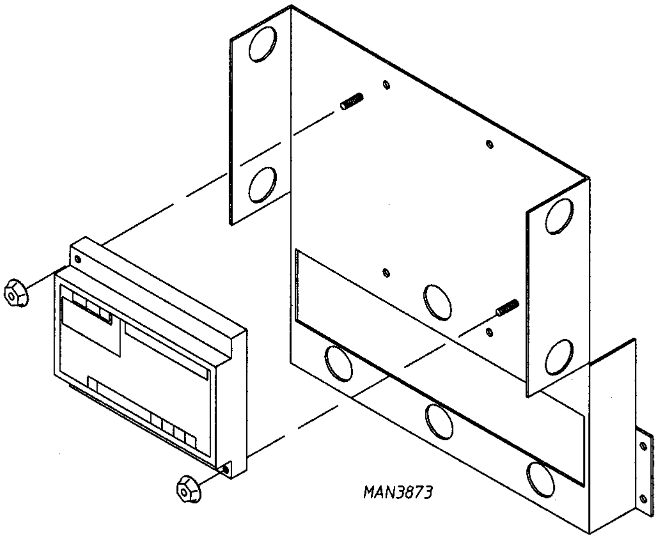
B. CONTROL BOX

Lifting the control door and opening the computer panel will reveal the control box. Inside the control box are **ALL** the electronic control components. Located on the back of the control box is the computer. Included in the control box are the 30-position terminal block, fuse block, and transformer.



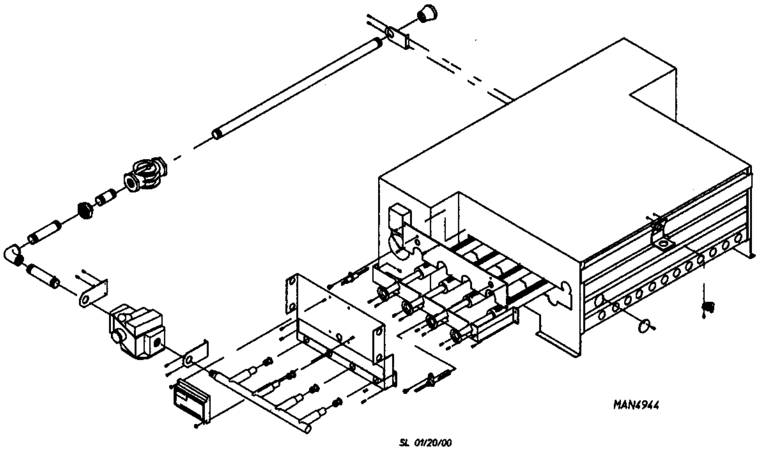
C. HSI MODULE (Gas Models ONLY)

The HSI (Hot Surface Ignition) system consists of a microprocessor-based control module, along with an ignitor and flame-probe assembly. This control utilizes a HSI (Hot Surface Ignition) ignitor and a rectified flame sensor/probe signal to locally control **ALL** basic functions in the gas burner.



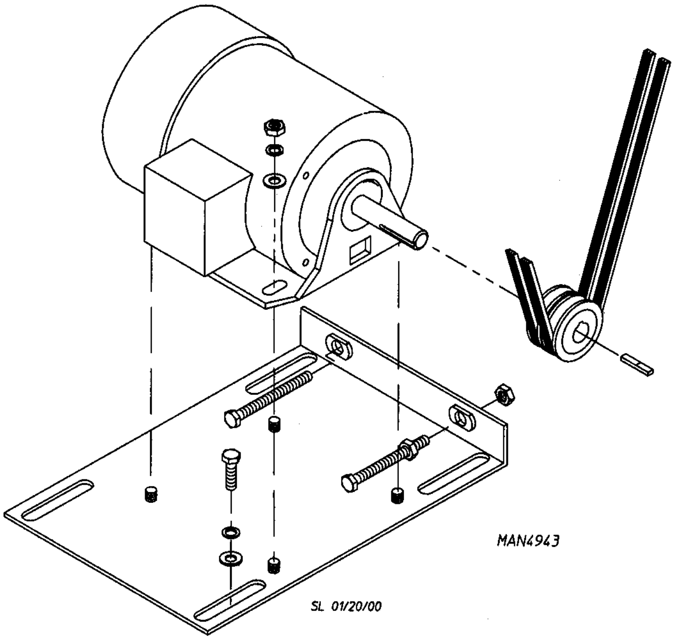
D. GAS BURNER ASSEMBLY

Gas-heated dryers are equipped with a gas burner assembly consisting of four (4) burner tubes, gas valve, HSI (Hot Surface Ignition) ignitor, flame probe, sail switch, and hi-limit thermostat. The inlet piping enters through the rear of the dryer on the left-hand side (viewing from the front) and runs to the front of the dryer where the gas valve is located.



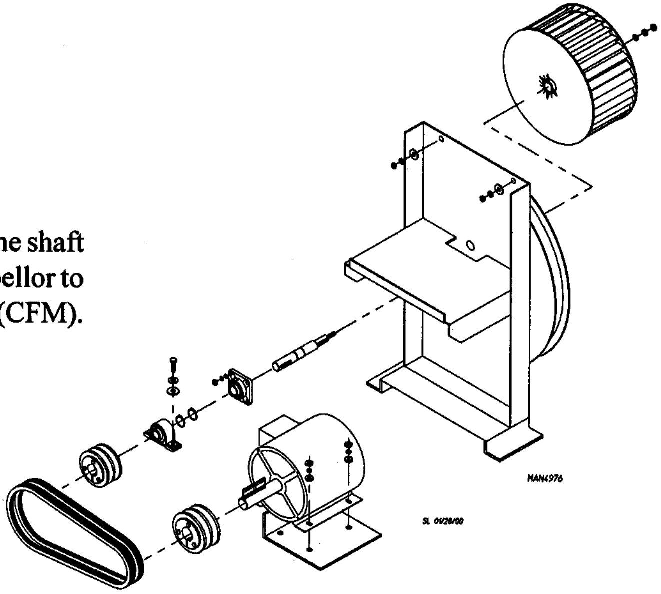
E. DRIVE MOTOR

The T.E.F.C. (Totally Enclosed, Fan-Cooled) drive motor is located approximately in the right front hand corner of the dryer. It sits on an adjustable base so that the motor can be easily adjusted to the left or right. The drive motor is a 3 HP motor and operates on 208 to 460 volts, 50/60 Hz, 3-phase (3ø).



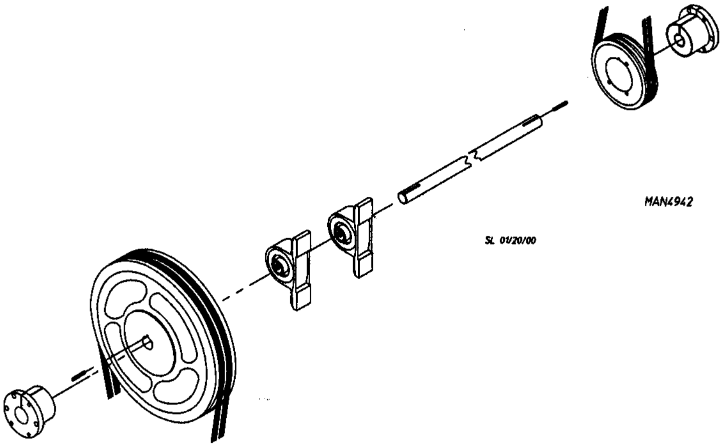
F. BLOWER MOTOR and IMPELLOR
(GAS and STEAM)

The impellor is shaft driven. The blower motor drives the shaft on which the impellor is mounted. This enables the impellor to run at a higher RPM, thereby producing a higher airflow (CFM).



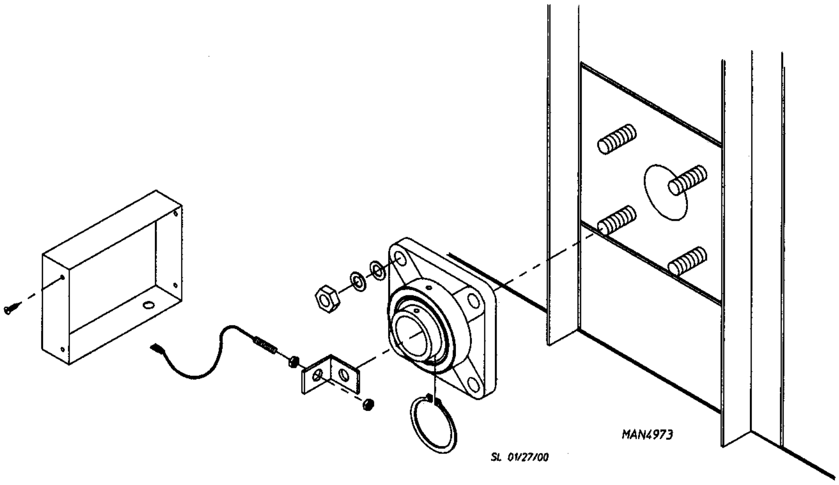
G. SPEED REDUCING SHAFT

(Viewing from the front of the dryer). The speed reducing shaft is located on the right side and is right above the drive motor. The idler assembly consists of two (2) idler pulleys, the small and large pulleys. The idler's main purpose is to reduce the speed and increase torque provided to the tumbler (basket) bearing. Also, at the idler assembly, belt tension can be adjusted.



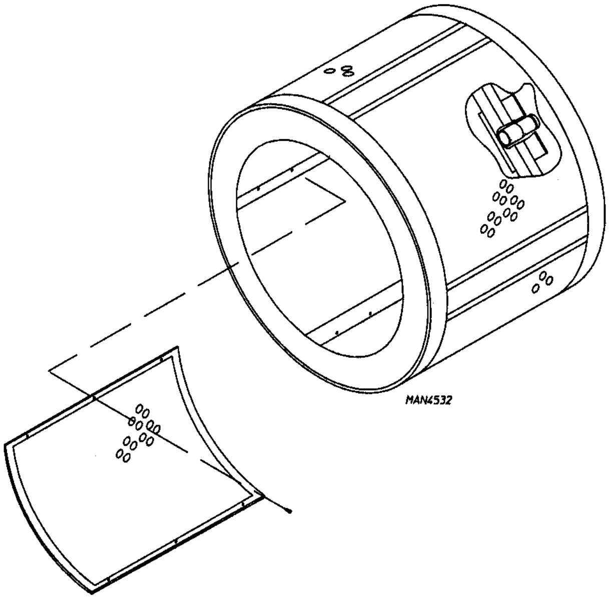
H. TUMBLER (BASKET) BEARING ARRANGEMENT

The tumbler (basket) bearing arrangement is located (viewing from the rear of the dryer) approximately at the upper center of the dryer. The arrangement consists of a bearing cap, rotational sensor and a flange bearing which serve to support the tumbler (basket).

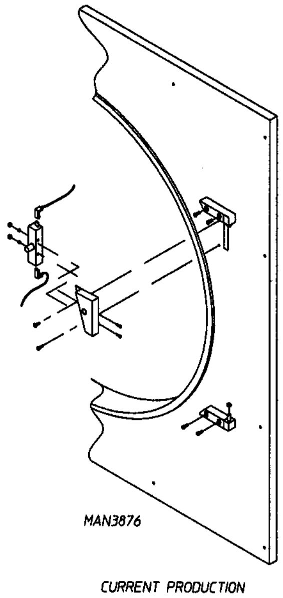


I. TUMBLER (BASKET)

The tumbler (basket) consists of four (4) ribs and four (4) perforated panels, along with a front and back, which are welded together as an assembly. The (tumbler [basket]) also consists of a trunnion, which supports the tumbler (basket) in the rear.



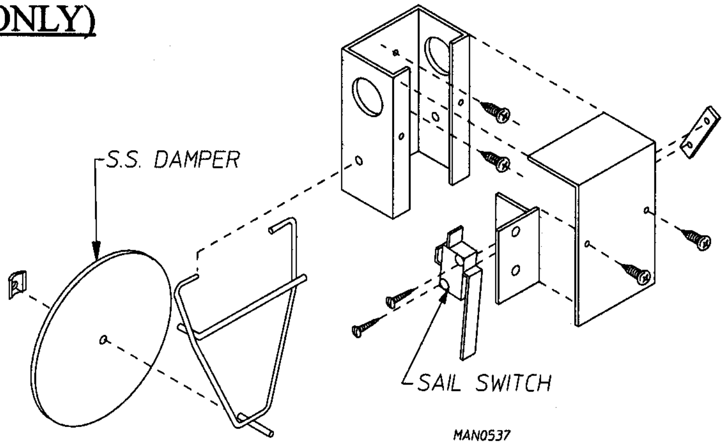
J. MAIN DOOR SWITCH



The main door switch is located near the main door hinge. When the main door opens, the switch will also open, preventing the dryer from operating. The main door switch is a safety device and **should never be** disabled.

K. SAIL SWITCH (GAS MODELS ONLY)

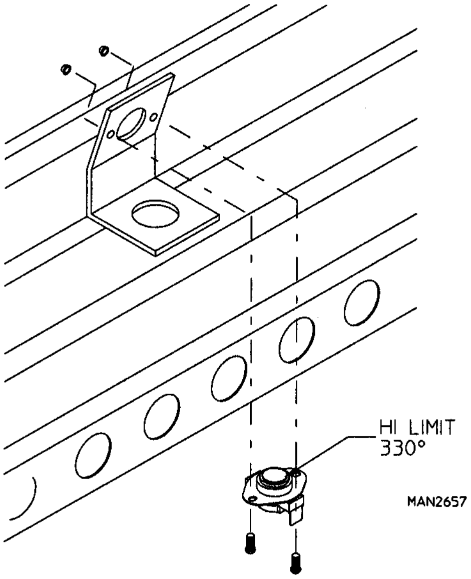
The sail switch is located on the front of the burner box. A sail switch consists of a round damper plate on a lever arm which is in contact with an electric switch. When the air blower comes on, it draws air through the gas burner. This creates a negative pressure inside the burner box, and this negative pressure pulls in the round damper and activates the sail switch. If there is improper airflow, the damper will not pull in, preventing the burner from starting.



Improper airflow can be caused by improperly designed exhaust ducting where the duct run is too long or has too many sharp bends in it. It can also be caused by a lack of make-up air.

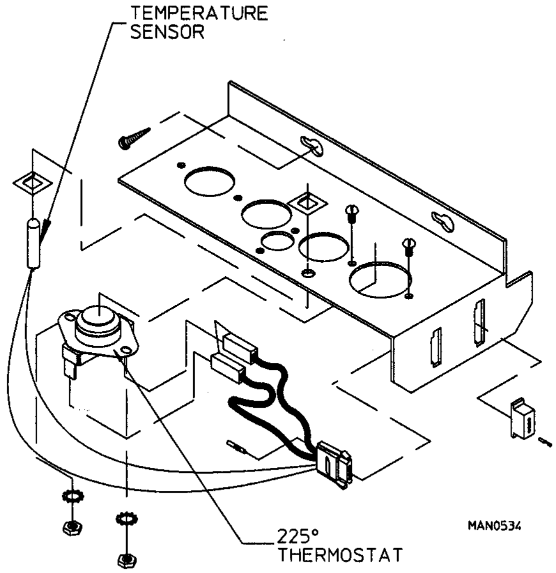
L. HI-LIMIT (GAS MODELS ONLY)

A hi-limit thermostat is located at the burner. This is a manual reset disc-type thermostat set at 330° F. If the flame in the burner should get too hot, this thermostat will shut off the burner. This is generally caused by low airflow through the dryer. The heat will not ignite/fire unless this manual reset thermostat is reset.



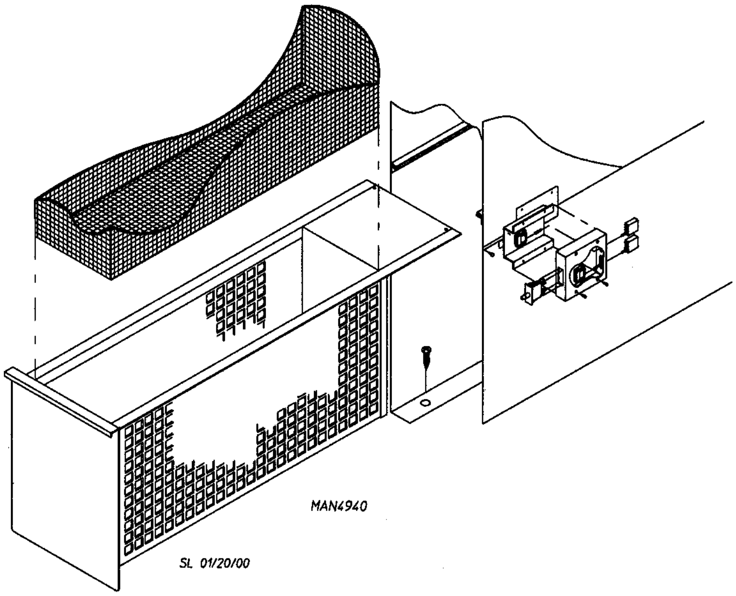
M. MANUAL RESET THERMOSTAT

This is located inside the dryer in the lint compartment above the lint drawer. This thermostat senses the heated air after it has passed through the tumbler (basket). If the air temperature gets too hot, the thermostat will shut off the burner. Tumbler (basket) and blower will run, but dryer will not heat until this thermostat is manually reset.



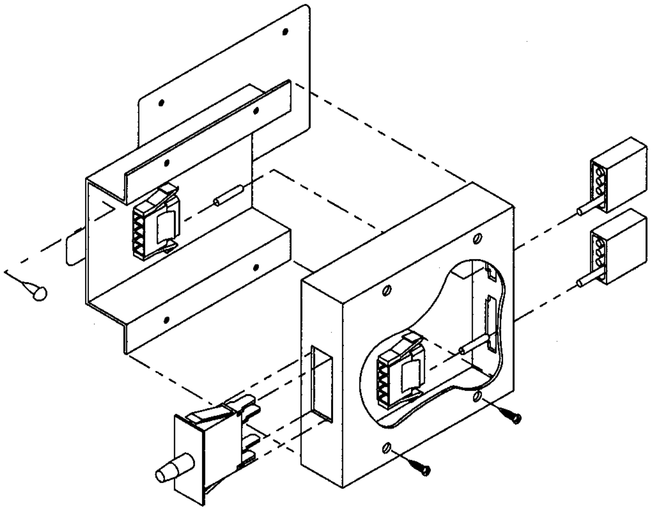
N. LINT DRAWER

The lint drawer is a pullout type and is located at the bottom of the dryer in the lint compartment. Simply grab the lint drawer handle, slide out the drawer, brush off the lint, and slide the drawer back in. The lint screen **must be** kept clean in order for the dryer to operate properly and efficiently.



O. LINT DRAWER SWITCH

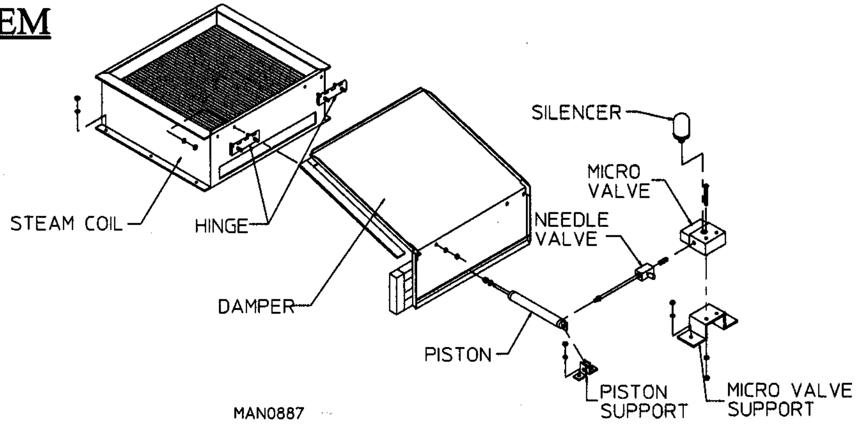
The lint drawer switch is located in the lint compartment and attached to the side of the lint drawer track. The lint drawer switch insures that the dryer will operate only when the lint drawer is completely closed. This is a safety device and **should never be** disabled.



SL 01/20/00

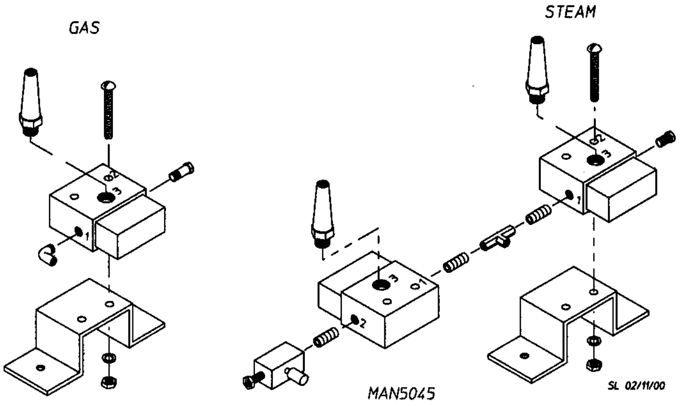
P. STEAM DAMPER SYSTEM

The newest type system is called the steam damper. It is shown to the right and it uses a piston with compressed air to open and close the steam damper which in turn allows the air to flow either through the coil for heat, or under the coil for cool down. Air supply is 80 PSI (+/- 10 PSI).


SILENCER
MICRO VALVE
NEEDLE VALVE
STEAM COIL
HINGE
DAMPER
PISTON
PISTON SUPPORT
MICRO VALVE SUPPORT
MAN0887

Q. COMPRESSED AIR REQUIREMENTS

The dryer requires an external supply of air (2.5 cfm @ 80 psi) on the steam models the air is necessary to operate the damper system. On both steam, as well as the gas model, the air is necessary/required for the blower air jet operation...to clean lint from the impellor/fan (squirrel cage type).


GAS
STEAM
1
2
3
MAN5045
SL 02/11/00

SECTION V

SERVICING

INTRODUCTION

ALL electrical/mechanical service or repairs **should be** made with the electrical power to the dryer disconnected (power off).

WARNING: PERSONAL INJURY COULD RESULT.

The information provided in this section **should not be** misconstrued as a device for use by an untrained person making repairs. Service work **should be** performed by competent technicians in accordance with local, state, and federal codes.

When contacting the factory for assistance, always have the dryer model and serial numbers available.

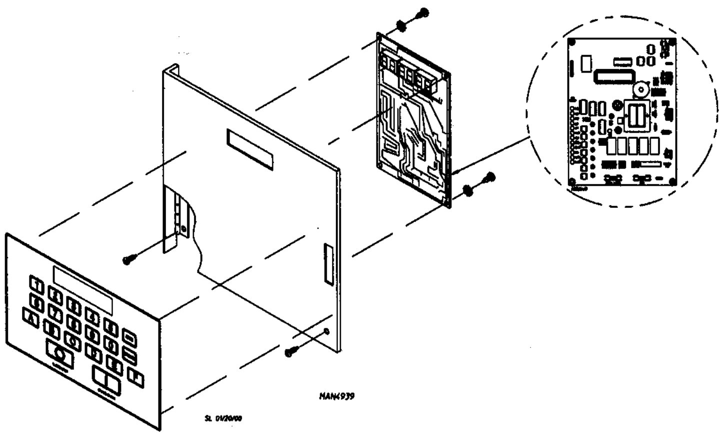
CAUTION: Observe **ALL** safety precautions displayed on the dryer or specified in this manual before and while making repairs.

Before considering replacement, make sure that **ALL** connectors are in place and making proper contact.

A. COMPUTER CONTROLS

To Replace Computer

1. Disconnect electrical power to the dryer.
2. Disconnect main power harness along with the three (3) other connectors located on the computer board, from rear of computer by squeezing locking tab and pulling connector straight back.
3. Disconnect the "green" ground wire and the air jet wire from the computer.
4. Disconnect keyboard (touchpad) ribbon from the computer.
5. Remove the two (2) securing the computer to the sheet metal control panel. Remove the board by pulling the other two (2) corners off the clinch studs.
6. Install new computer by reversing this procedure.



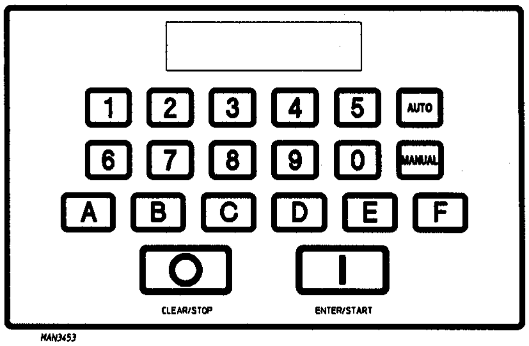
7. When replacing the computer, the "A" and "B" factors **must be** reprogrammed. (Refer to "Computer Operator's Manual" for details.)

NOTE: The "A" and "B" factors are printed on a label located on the rear of the control panel (refer to illustration).

8. Reestablish electrical power to the dryer.

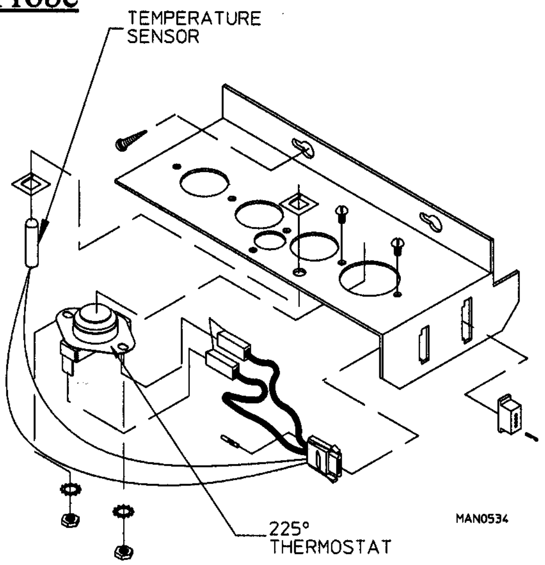
To Replace Keyboard (Touchpad) Label Assembly

1. Discontinue electrical power to the dryer.
2. Unplug keyboard (touchpad) ribbon from rear of computer.
3. Slowly peel off and remove keyboard (touchpad) label assembly from control panel.
4. Peel paper backing off new keyboard (touchpad) label assembly.



5. Holding the new keyboard (touchpad) label assembly close to the panel, insert the keyboard (touchpad) ribbon through the rectangular slot in the control panel. Align label assembly into position by matching the red viewing window on the label to the rectangular cutout in the panel and gently press into place.
6. Connect keyboard (touchpad) ribbon to the computer.
7. Reestablish electrical power to the dryer.

To Replace Microprocessor Temperature Sensor Probe



1. Discontinue electrical power to the dryer.
2. Remove lint drawer. Remove six (6) screws securing lint door and remove lint door.
3. Remove microprocessor sensor bracket assembly from dryer.
   a. Disconnect sensor bracket harness connector.
   b. Loosen the two (2) Phillips head screws securing bracket assembly to dryer and remove bracket from dryer.

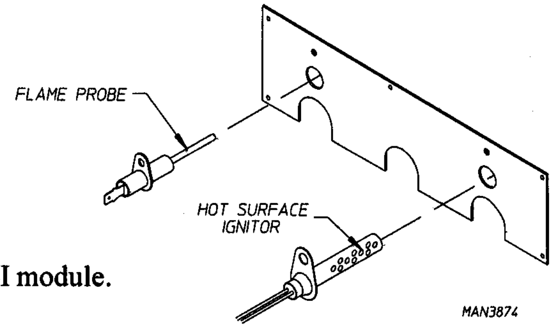
NOTE: ***DO NOT*** remove screws.

4. Disassemble sensor probe from bracket assembly by removing the top push-on fastener securing the probe from bracket. Use a small screwdriver to slowly pry the fastener off.
5. Disconnect the two (2) "orange" wires from the high heat (225° F) thermostat, and remove modular bracket connector, wires, and probe from bracket assembly.
6. Install new sensor probe assembly (**ADC** P/N 880251) by reversing procedure.
7. Reestablish electrical power to the dryer.

NOTE: If, when power is reestablished, the computer display reads "Temp Sensor Check Temp Sensor Fuse," check for a loose connection in the wiring.

B. IGNITION CONTROLS

To Remove HSI (Hot Surface Ignition) Ignitor



1. Discontinue electrical power to the dryer.
2. Disconnect the two (2) "white" ignitor wires going to the HSI module.
3. Disassemble HSI ignitor from burner by removing the self tapping screw.
4. Reverse procedure for installing new ignitor.

C. TO REMOVE FLAME PROBE ASSEMBLY

1. Discontinue electrical power to the dryer.
2. Disconnect the "red" wire from the flame sensor probe which goes to S2 on the HSI module.
3. Disassemble flame sensor probe from burner by removing the self tapping screw.

4. Reverse procedure for installation of new flame sensor probe.

To Replace Gas Valve (Refer to burner illustration on **page 21**)

1. Discontinue electrical power to the dryer.

2. Close shut-off valve(s) in gas supply line.

3. Disconnect gas valve wiring.

NOTE: Identify location of each wire for correct reinstallation.

4. Break union connection before gas valve.

5. Loosen and remove screws (4) securing pipe brackets to burner.

6. Remove gas valve/manifold assembly from dryer.

7. Remove valve mounting bracket, manifold, and piping from gas valve.

8. Reverse procedure for installing new gas valve.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Replace Main Burner Orifices

1. Refer to "To Replace Gas Valve" and follow ***Step #1 through Step #6***.

2. Unscrew main burner orifices and replace.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

3. Reversing the removal procedure for reinstalling.

NOTE: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME!!!**

To Test and Adjust Gas (Water Column) Pressure

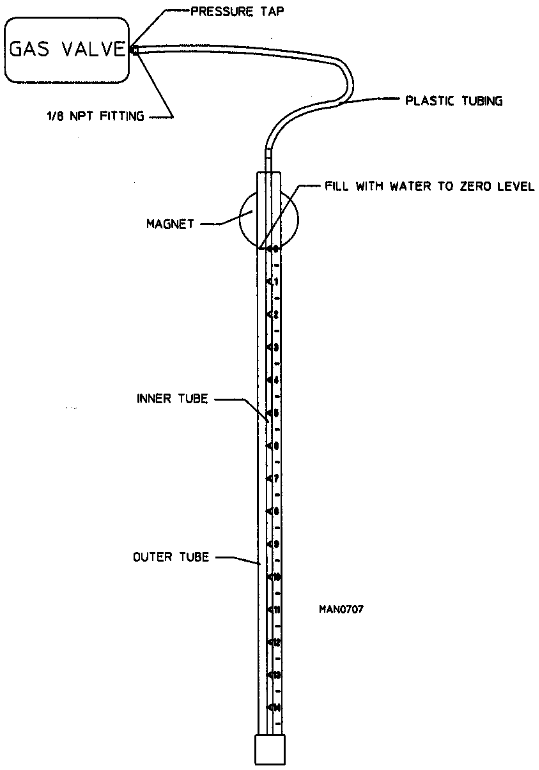
There are two (2) types of devices commonly used to measure water column pressure. They are spring/mechanical-type gauges and manometers. The spring/mechanical-type gauge is not recommended, because it is easily damaged and not always accurate. A manometer is simply a glass or transparent plastic tube with a scale in inches. When filled with water and pressure applied, the water in the tube rises showing the exact water column pressure.

NOTE: Manometers are available from the factory by ordering **ADC** P/N 122804.

1. To Test Gas Water Column (W.C.) Pressure:
   a. Connect water column test gauge connection to gas valve pressure tap (1/8” NPT). This pressure tap is located on the outlet (manifold) side of the valve.
   b. Start dryer. With burner on, the correct water column reading in inches would be:

      Natural Gas – 3.5 Inches Water Column

      L.P. Gas – 10.5 Inches Water Column
2. To Adjust Water Column Pressure (natural gas only, L.P. gas **must be** regulated at source):
   a. Remove the slotted vent cap on the top of the valve.
   b. Turn the slotted adjustment screw located on the top of the valve next to the terminals. Turn clockwise (CW) to increase manifold pressure and counterclockwise (CCW) to decrease.



NOTE: If correct W.C. pressure **cannot** be achieved, problem may be due to an undersized gas supply line, a faulty or underrated gas meter, etc.

To Convert from Natural Gas to L.P. Gas

NOTE: **ALL** dryers are sold as natural gas, unless otherwise specified at the time the dryer order was placed. For L.P. gas the dryer ***must be*** converted as follows.

1. Refer to “Replace Gas Valve” and follow ***Step #1 through Step #6***.
2. Remove the four (4) screws which secure the top cap assembly. This assembly contains the regulator adjustment screw and the terminal connections.
3. Replace the top cap assembly with the L.P. version.
4. Unscrew main burner orifices and replace with L.P. orifices.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

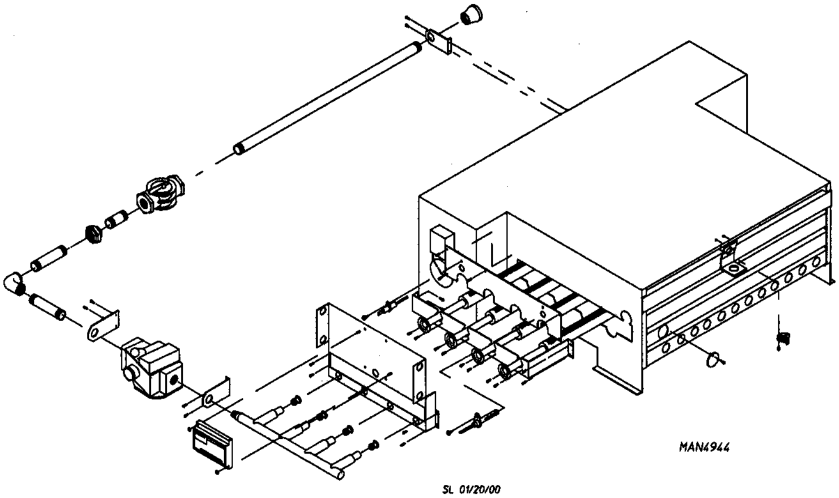
5. Reverse the procedure for reinstalling valve assembly to the dryer.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: NEVER TEST FOR LEAKS WITH A FLAME!!!

NOTE: There is no regulator provided in an L.P. dryer. The column pressure ***must be*** regulated at the source (L.P. tank) or an external regulator ***must be*** added to each dryer.

To Replace Burner Tubes

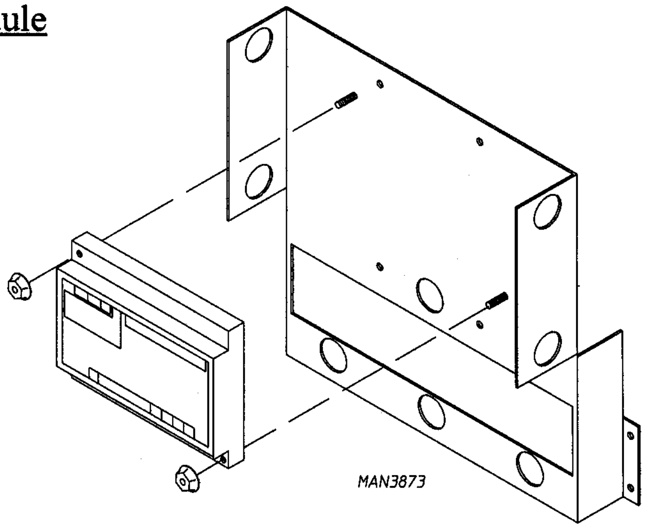


1. Refer to "Replace Gas Valve" and follow ***Step #1 through Step #6***.
2. Remove four (4) screws securing manifold rest and remove rest.
3. Remove the screws securing the front flanges of the burner tubes to the burner tube rest.
4. Remove the screws securing the burner tube rest to the oven and remove this rest.
5. Remove screws securing the burner box cover plate to the oven and remove this plate.
6. Remove burner tubes by sliding them out.
7. Replace by reversing procedure.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME****!!!**

To Replace HSI (Hot Surface Ignition) Module



1. Discontinue electrical power to the dryer.
2. Remove the wires connected to the terminal strip at the bottom of the module.
3. Remove the two (2) pal nuts securing the module to the mounting bracket.
4. Replace module by reversing procedure.
5. Reestablish electrical power to the dryer.

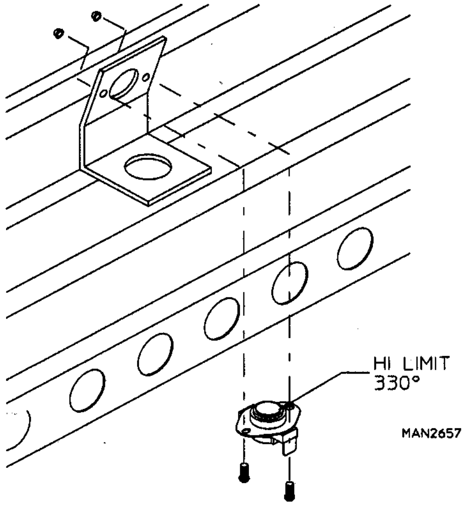
C. THERMOSTATS

To Replace Burner Hi-Limit Thermostat (Gas Models Only)

This thermostat is an important safety device serving as an added protection against failure of the airflow (sail switch) to open in the event of motor failure or reduced airflow condition.

IMPORTANT: **UNDER NO CIRCUMSTANCES** should heat circuit safety devices ever be disabled.

1. Discontinue electrical power to the dryer.
2. Disconnect wires from hi-limit thermostat.
3. Remove screw, washer, and nut securing thermostat to the bracket. Remove thermostat.
4. Reverse procedure for installing new thermostat.
5. Reestablish electrical power to the dryer.



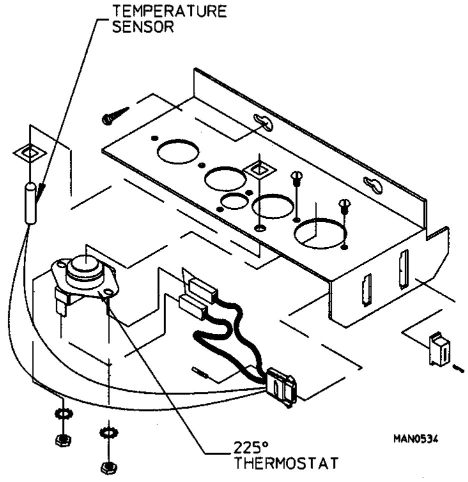
To Replace Lint Compartment Hi-Heat Protector (225° F) Thermostat

This thermostat is part of the "sensor bracket assembly" and is secured to the underside of the tumbler (basket) wrapper in the lint compartment. As a safety device, this thermostat will open (shut off) the heating unit circuit if an excessive temperature occurs. The dryer motors will remain on, even if the thermostat is open.

IMPORTANT: **UNDER NO CIRCUMSTANCES** should heat safety devices be disabled.

1. Discontinue electrical power to the dryer.
2. Remove lint drawer. Remove two (2) screws securing lint door and remove lint door.
3. Locate sensor bracket assembly and loosen the two (2) Phillips head screws securing bracket assembly to the tumbler (basket) wrapper.

NOTE: ***DO NOT*** remove the screws.



4. Remove bracket assembly by slightly sliding bracket towards the rear of the dryer and to the left.
5. Disconnect sensor bracket harness connector and remove bracket assembly from dryer.
6. Disconnect the two (2) "orange" wires from the thermostat.
7. Disassemble thermostat from bracket assembly by removing the two (2) mounting screws, washers, and nuts.
8. Reverse this procedure for installing a hi-heat protector thermostat.
9. Reestablish electrical power to the dryer.

NOTE: This is a manual reset thermostat. Before changing the thermostat make sure the reset button is in to determine if the thermostat has failed.

D. SAIL SWITCH ASSEMBLY (GAS MODELS ONLY)

The sail switch is a heat circuit safety device which controls the burner circuit only. When the dryer is operating and there is proper airflow, the sail switch damper pulls in and closes the sail switch. Providing **ALL** the other heat-related circuits are functioning properly, ignition **should now be** established. If an improper airflow occurs, the sail switch damper will release, and the circuit will open.

To Replace Sail Switch

1. Disconnect electrical power to the dryer.
2. Remove the two (2) screws which hold sail switch box cover to sail switch box.
3. Disconnect the two (2) wires from the switch.
4. Disassemble sail switch from mounting bracket by removing the two (2) screws securing switch in place.
5. Reverse this procedure for installing new sail switch. Adjust sail switch as described in the next section.

To Adjust Sail Switch

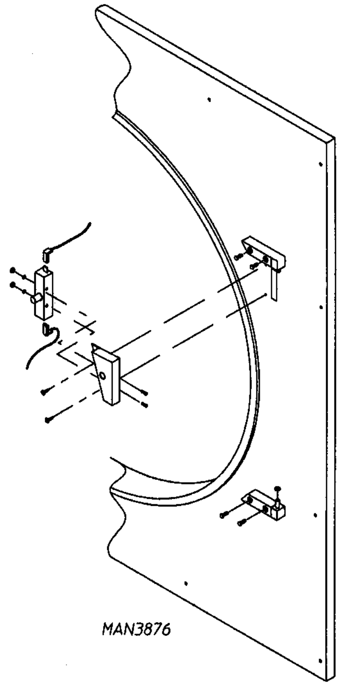
With the dryer operating at a high temperature setting, pull the sail switch away from the burner. The sail switch should open and extinguish the burner. Let the sail switch damper return to the burner wall. The sail switch should close to restart the burner ignition cycle. If the sail switch circuit does not operate as described, bend the actuator arm of the sail switch accordingly until proper operation is achieved. To check proper "open" position of sail switch, open main door, manually depress main door switch, and start dryer. With the main door open and the dryer operating, the sail switch **should be** open, and the burner should not come on.

CAUTION: ***DO NOT*** abort this switch by taping or screwing sail switch damper to burner. **PERSONAL INJURY or FIRE COULD RESULT.**

E. FRONT PANEL and MAIN DOOR ASSEMBLIES

To Replace Main Door Switch

1. Discontinue electrical power to the dryer.
2. Open main door.
3. Remove the two (2) Phillips head screws holding the main door switch bracket assembly in place.
4. Remove door switch bracket and disconnect wiring from switch.
5. Disassemble door switch from bracket by removing the two (2) #6-32 nuts. Remove door switch from bracket.
6. Reverse this procedure for installing new door switch.

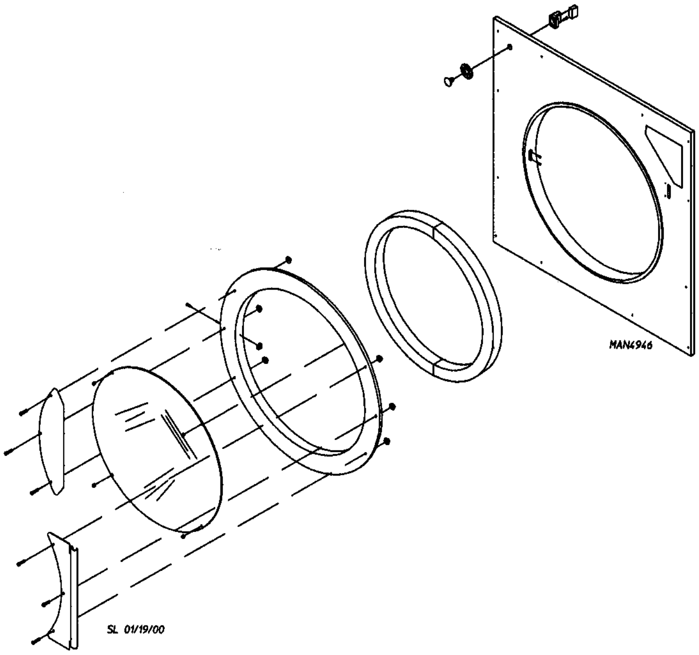


CURRENT PRODUCTION

7. Reestablish electrical power to the dryer.

IMPORTANT: **UNDER NO CIRCUMSTANCES** should the door switch be disabled.

To Replace Main Door Assembly



1. Remove two (2) Allen head screws holding the top main door hinge block to the front panel.
2. Reverse this procedure for reinstalling new main door assembly.

To Install New Main Door Glass

1. Remove main door assembly from dryer (follow main door removal procedure).
2. Lay main door on flat surface with front of door face up.
3. Remove the four (4) #10-32 Acorn nuts.
4. Remove glass and clean **ALL** old sealant off main door. This area **must be** completely cleaned for correct bonding.
5. Apply a narrow bead of silicone (**ADC** P/N 170730) **ALL** around main door area where glass will rest.
6. Install glass onto door/adhesive and slightly press glass in place.

IMPORTANT: ***DO NOT*** press hard or silicone thickness between the glass and door will be reduced, resulting in poor bonding.

7. Secure the four (4) #10-32 Acorn nuts to hold the glass.
8. The door assembly **should now be** put in an area where it will not be disturbed for at least 24 hours. Depending on the conditions, the curing time of this adhesive is 24 to 36 hours.
9. After 24-hour curing period, install main door on dryer by reversing step 1.

To Replace Front Panel

1. Discontinue electrical power to the dryer.
2. Remove main door switch and bracket assembly.
3. Follow procedure for removal of main door assembly.
4. Open control (service) door.
5. Remove lint drawer and open lint door by removing six (6) screws.

6. Unplug the door switch wires at the bottom of the front panel.

7. Disconnect the wires connecting the "EMERGENCY STOP" (E-Stop). The easiest place to do this would be in the left hand electrical box. Once the wires are disconnected, push them through the inner top.

8. Remove the twelve (12) Phillips head screws securing front panel to dryer.

9. Pull wires up through front panel door switch wire channel and gently remove front panel assembly.

10. Reverse this procedure for installing new front panel.

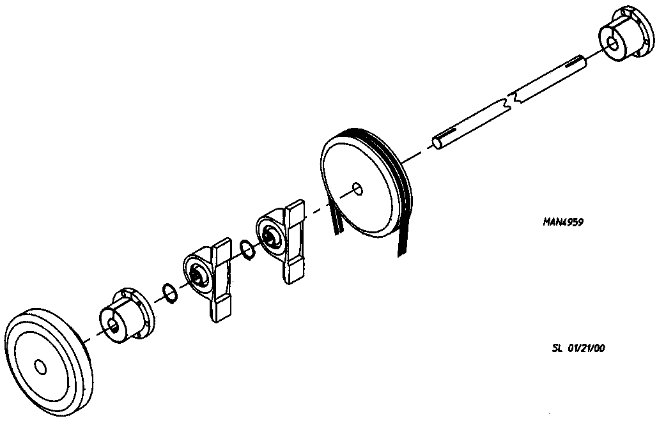
11. Reestablish electrical power to the dryer.

To Replace Main Door Hinge Blocks

1. Discontinue electrical power to the dryer.
2. Follow procedure for removal of main door assembly.
3. Remove bottom hinge block by removing the two (2) 1/4-20 screws.
4. Reassemble by reversing removal procedure.
5. Reestablish electrical power to the dryer.

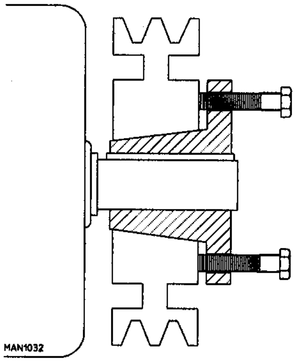
F. PULLEYS

To Replace Drive Shaft Pulley



1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove right lint coop wall.
5. Loosen V-belts, then rotate pulley and roll V-belts out of its' grooves.
6. Remove cap screws from the bushings.
7. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A."
8. Remove bushing, pulley, and key.

A



9. Assemble bushing and sheave as shown in figure "B" on **page 26**. When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
10. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.

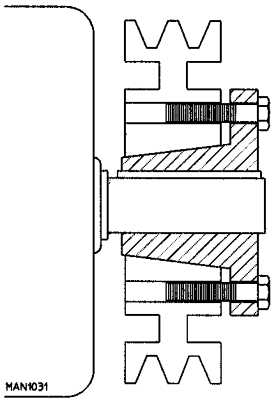
11. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 30 ft.-lbs. If greater tightening forces are applied, excess pressures will be created in the hub of the mounted sheave which may cause it to crack.

To Replace Small Speed Reducing Pulley Shaft

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove right lint coop wall.
5. Loosen V-belts, then rotate pulley and roll V-belts out of its' grooves.
6. Remove cap screws from the bushings.
7. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on **page 25**.

B

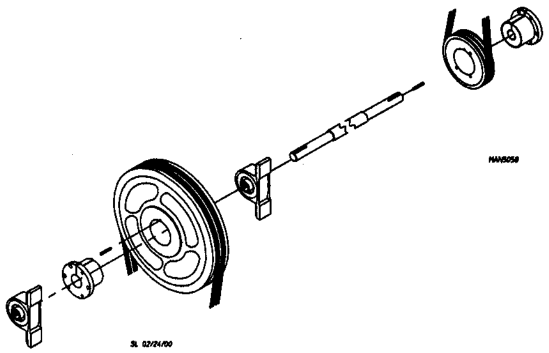


8. Remove bushing, pulley, and key.
9. Assemble bushing and sheave as shown in figure "B." When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
10. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
11. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 6 ft.-lbs., if greater tightening forces are applied, excess pressures will be created in the hub of the mounted sheave which may cause it to crack.

To Replace Large Speed Reducing Pulley

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove right hand lint coop wall.



5. Follow step 4 thru 8 under "To Replace Front Speed Reducing Shaft Bearing" on **page 29**.

6. Remove front bearing from speed reducing shaft.

7. Remove cap screws.

8. Remove bushing, pulley, and key.

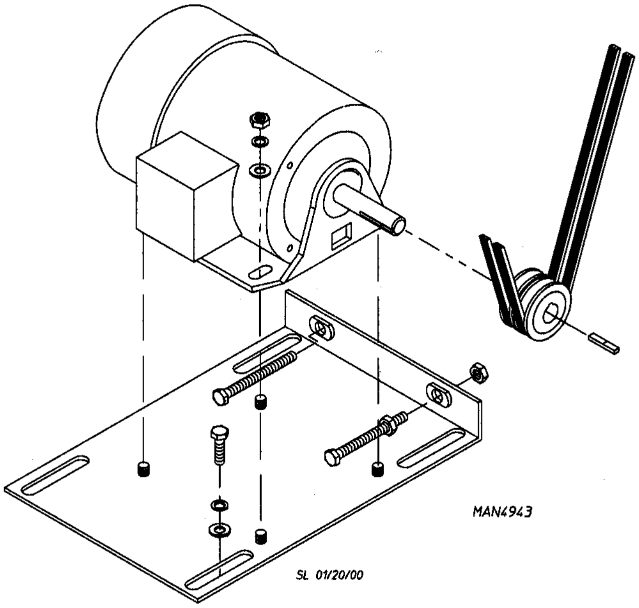
9. Assemble bushing and sheave as shown in figure "B" on **page 26**. When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.

10. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 15 ft.-lbs. If greater tightening forces are applied, excess pressures will be created in the hub of the mounted sheave which may cause it to crack.

11. Reverse steps 1 thru 6 for reassembly.

To Replace Motor Pulley



1. Discontinue electrical power to the dryer.

2. Remove the lint drawer.

3. Remove the lint door.

4. Loosen V-belts, then rotate pulley and roll V-belts out of its' grooves.

5. Remove cap screws from bushing.

6. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on **page 25**.

7. Remove bushing, pulley, and key.

8. Assemble bushing and sheave as shown in figure "B" on previous page. When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.

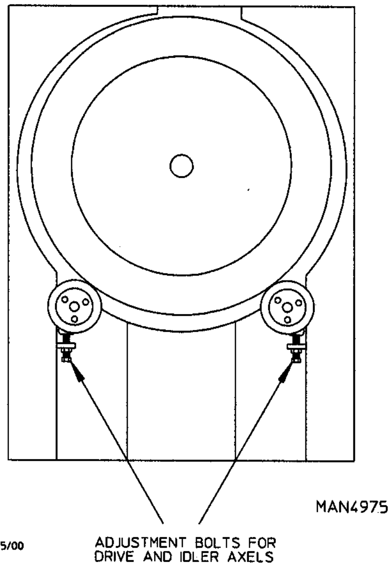
9. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.

10. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 6 ft.-lbs., if greater tightening forces are applied, excess pressures will be created in the hub of the mounted sheave which may cause it to crack.

G. TUMBLER (BASKET) ALIGNMENT

ML-175 BASKET ADJUSTMENT / ALIGNMENT



1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove both the left hand and right hand lint coop walls.
5. Loosen the V-belts on drive shaft, then rotate pulley and roll V-belts out of its' grooves.
6. Tighten the two (2) bolts under the drive shaft clockwise (CW) to raise the tumbler (basket) and counterclockwise (CCW) to lower the tumbler (basket). The bolts **should be** tightened in even increments in order to ensure that the shaft runs parallel with the base of the dryer.

IMPORTANT: Side to side adjustment of the tumbler (basket) ***should be*** equal on either side of the front panel, but vertically the top of the tumbler (basket) should have a larger gap than the bottom to compensate for the load.

IMPORTANT: Be sure to tighten the left idler side to the same height as the right side/drive side. This length can be determined by taking measurements from the bottom of each pillow block bearing to the top of the bearing pad.

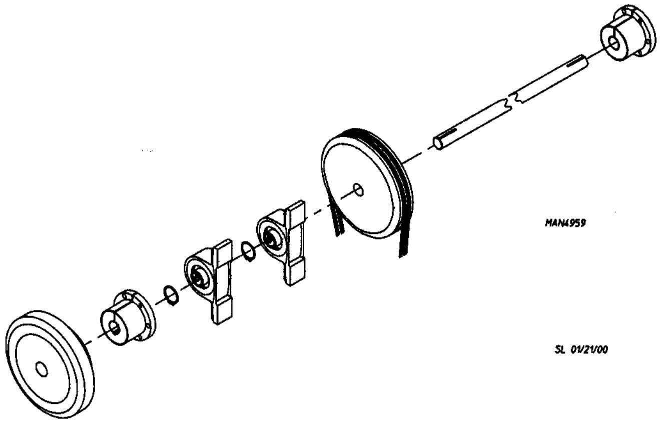
NOTE: If the axle height is not the same on the drive and idler side, then the tumbler (basket) will be either more to the right or left side, depending on which axle is higher.

7. Tighten locking nuts on the adjustment bolts.
8. Reverse ***Step #1 through Step #5*** for reassembly.
9. Check tumbler (basket) drive belt for proper tension. Adjust if necessary.
10. Reestablish electrical power to the dryer.

H. BEARINGS

To Replace Rear Drive Shaft Pillow Block Bearing

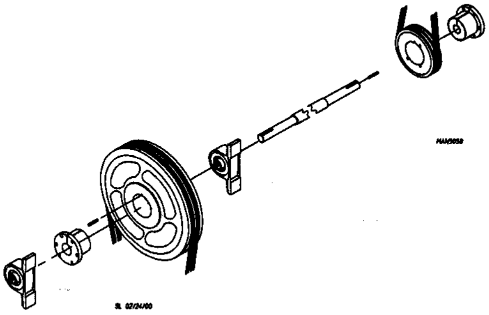
1. Follow ***Step #1 through Step #6*** from "To Replace Front Drive Shaft Bearing."
2. Remove drive pulley.
   a. Remove cap screws from bushing.
   b. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft.
   c. Remove set screws from bushing.
   d. Remove bushing, pulley, and key.
3. Reverse these steps for the installation of new bearing.



To Replace Front Speed Reducing Shaft Bearing

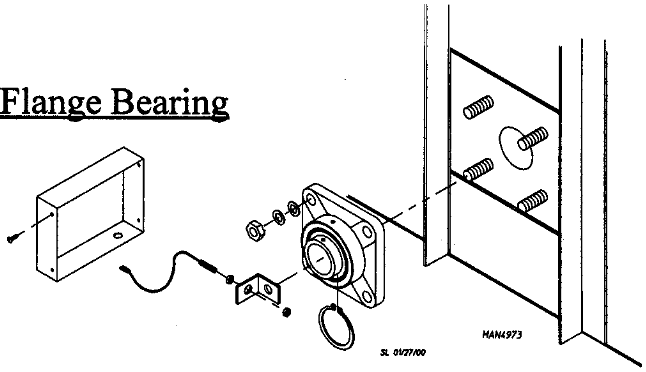
1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen and roll V-Belts off that connect speed reducing shaft to drive shaft.
5. Remove the four (4) bolts holding the two (2) speed reducing shaft pillow block assembly in the dryer.
6. Loosen and roll V-belts off that connect speed reducing shaft to the drive motor.
7. Remove retaining ring that is located closest to the front bearing.
8. Loosen and remove the two (2) set screws in the front pillow block bearing.
9. Install new bearing by reversing these procedures.

To Replace Rear Speed Reducing Shaft Bearing



1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen and roll V-Belts off that connect speed reducing shaft to drive shaft.
5. Loosen and roll V-belts off that connect speed reducing shaft to the drive motor.
6. Remove retaining ring that is located closest to the front/rear bearing.
7. Remove the four (4) bolts holding the two (2) speed reducing shaft pillow block assembly in the dryer.
8. Loosen and remove the two (2) set screws in the front/rear pillow block bearing.
9. Remove front/rear pulley.
    a. Remove cap screws from bushing.
    b. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft.
    c. Remove set screws from bushing.
    d. Remove bushing, pulley, and key.
10. Install new bearing by reversing these procedures.
11. Reestablish electrical power to the dryer.

To Replace Rear Tumbler (Basket) Support Flange Bearing

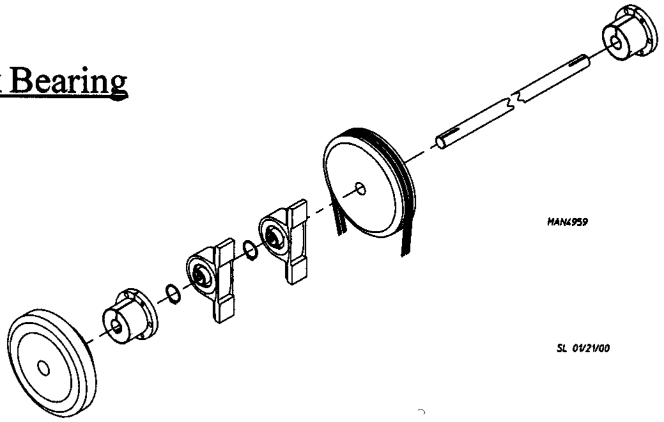


1. Discontinue electrical power to the dryer.
2. Remove bearing back guard.
3. Block rear of tumbler (basket) up to take weight off of shaft and bearing.

NOTE: This may be accomplished the easiest through the lint coop.

4. Remove the four (4) nuts securing the flange bearing.
5. Loosen the two (2) set screws from rear pillow block bearing collar.
6. Using two (2) flat head screw drivers, place one (1) between the casting of the bearing and the back of the dryer on both the top and bottom of the bearing. Try on the bearing until there is a large enough gap to fit the arms of a bearing puller.
7. Using a bearing pulley remove the flange bearing.
8. Replace by reversing ***Step #3 through Step #6.***
9. Adjust both lateral and vertical tumbler (basket) alignment. Check both the vertical and lateral adjustment of the tumbler (basket).
10. Reestablish electrical power to the dryer.

To Replace Front Drive Shaft Pillow Block Bearing



1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen and roll V-belts off that connect speed reducing shaft to drive shaft.
5. Remove the two (2) retaining rings from the tumbler (basket) drive shaft.
6. Remove the four (4) bolts holding the drive shaft assembly in the dryer.
7. Remove drive wheel.
   a. Remove cap screws from bushing.
   b. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft.
   c. Remove bushing, pulley, and key.

NOTE: Check belt adjustment and readjust if necessary.

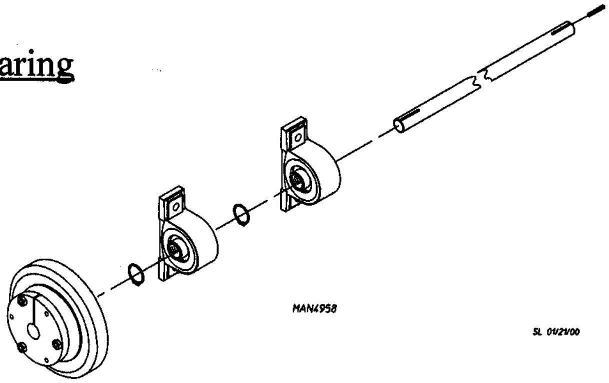
8. Remove wheel from shaft.

9. Loosen the two (2) set screws in the race of the pillow block bearing.

10. Clean the shaft from the end up to the pillow block bearing and slide the pillow block bearing off of the shaft.

11. Reverse these steps to install new pillow block bearing.

To Replace Front Idler Shaft Pillow Block Bearing



1. Discontinue electrical power to the dryer.

2. Remove the lint drawer.

3. Remove the lint door.

4. Block tumbler (basket) up.

5. Loosen adjustment bolt(s) and lock nuts securing the pillow block bearing up.

6. Remove bolts holding each idler pillow block bearing to mount.

7. Remove idler shaft (with both bearings and wheel still attached) from dryer.

8. Remove the retaining ring closest to the front bearing.

9. Remove drive wheel.

   a. Remove cap screws from bushing.

   b. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft.

   c. Remove bushing, pulley, and key.

10. Slide bearing off the shaft.

11. Replace bearing by reversing procedure.

12. Reestablish electrical power to the dryer.

To Replace Rear Idler Shaft Pillow Block Bearing

1. Follow ***Step #1 through Step #7*** from "To Replace Front Idler Shaft Bearing."

2. Remove retaining ring closest to the rear pillow block bearing.

3. Loosen the two (2) set screws on each bearing collar.

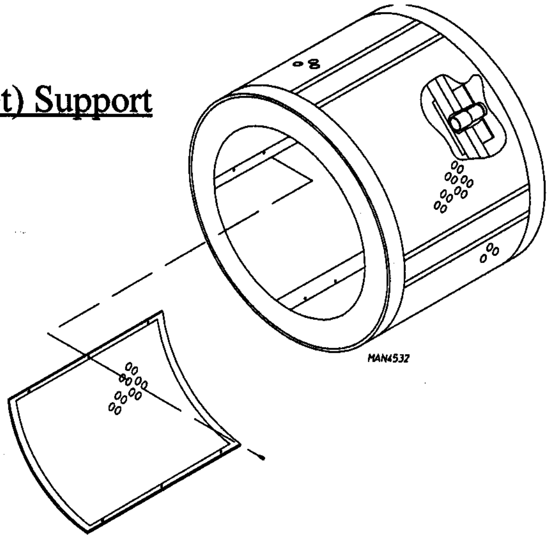
4. Slide the bearing off the shaft.

5. Replace by reversing procedure.

6. Reestablish electrical power to the dryer.

I. BASKET and SUPPORT

To Replace Tumbler (Basket) and Tumbler (Basket) Support



1. Discontinue electrical power to the dryer.
2. Follow procedure for removal of main door assembly.
3. Follow procedure for removal of front panel assembly.
4. Remove bearing back guard.
5. Remove tumbler (basket) assembly and support.
   a. Loosen the two (2) set screws on the flange bearing.
   b. Remove the retaining ring from the groove of the tumbler (basket) shaft.
   c. Remove the rotational sensor magnet from the tumbler (basket) support shaft.
   d. Remove the tumbler (basket) and support assembly from the front of the dryer. If the tumbler (basket) **cannot** be removed freely, clean the shaft area and spray WD-40 or similar lubricant. With a block of wood against the shaft end, strike the block wood with a hammer or mallet to move the shaft past any burrs made by the set screws.

IMPORTANT: Never strike the shaft directly with a hammer.

6. Reverse these steps for installation of new tumbler (basket) and tumbler (basket) support.
7. Reestablish electrical power to the dryer.

J. V-BELTS (See illustrations in section F "Pulleys")

V-belts should have proper tension. If too loose, they will slip, excessive wear on the bearings will result. If the pulleys are not properly aligned, excessive belt wear will result. Proper belt tension will allow 1/2" displacement under normal thumb pressure at mid span of belt.

NOTE: Belts ***must always be*** replaced in pairs (matched sets).

V-Belt Tension Adjustment (Drive Shaft to Speed Reducing Shaft)

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen two (2) bolts securing rear pillow block bearing on the drive shaft.
5. Loosen adjustment bolt that is securing the rear pillow block bearing of the drive shaft.
6. Loosen two (2) bolts securing rear speed reducing shaft bearing.
7. Loosen adjustment bolt supplying pressure to the rear bearing on the speed reducing shaft.
8. Remove old V-belts.
9. Reverse these steps to install new V-belts.

NOTE: After tensioning the V-belts, check to make sure both the drive shaft and speed reducing are parallel or level to the base of the dryer.

V-Belt Tension Adjustment (Motor To Speed Reducing Shaft)

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen two (2) bolts securing front bearing on speed reducing shaft.
5. Loosen tension bolt that is under the front bearing of the speed reducing shaft.
6. Remove the V-belts.
7. Replace V-belts by reversing the above procedures.

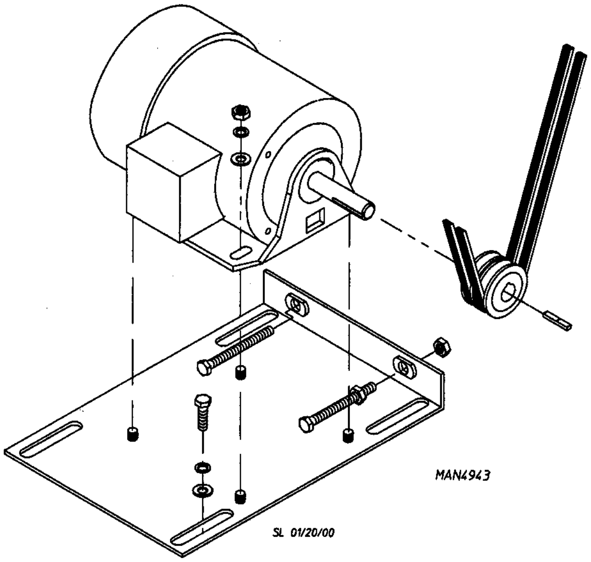
To Replace V-Belts From The Blower Motor To The Fan

1. Loosen the four (4) bolts securing the motor to the base of the dryer.
2. Loosen the tension bolts.
3. Remove old V-belts.
4. Reverse these steps to replace V-belts.

NOTE: Always replace V-belts in pairs.

K. MOTORS

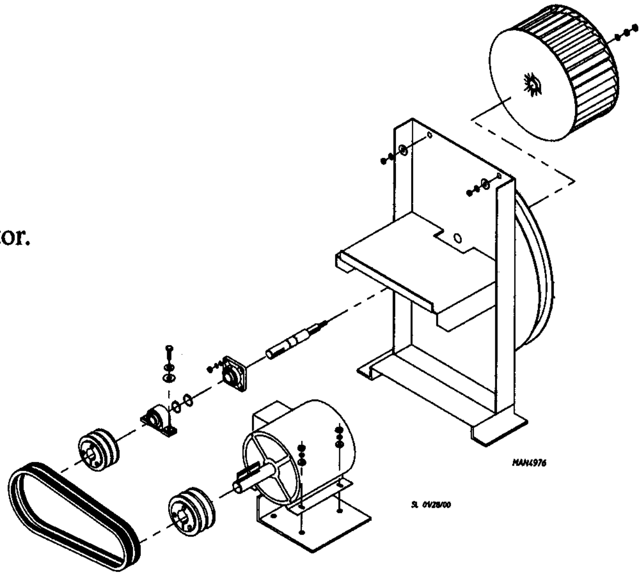
To Replace Drive Motor



1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove the left lint wall.
5. Remove the drive V-belts. Follow V-belt replacement from motor to speed reducing shaft.
6. Loosen the four (4) bolts securing the motor to the base of the dryer.
7. Disconnect the motor wiring.
8. Remove old motor pulley and bushing and place on new motor.
9. Reverse these steps to replace drive motor.

To Replace Impellor Motor (Fan Shaft Drive - 50/60 Hz Gas and Steam Models)

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove the left hand lint wall.
5. Loosen the four (4) mounting bolts securing the motor.
6. Loosen the tension bolts.
7. Remove V-belts.
8. Disconnect motor wiring.
9. Remove the motor pulley and bushing.
10. Reverse these steps for installation of new motor.



To Replace Fan Shaft and/or Fan Shaft Bearings

A. To remove from the front

1. Follow ***Step #1 through Step #8*** under "To Replace Impellor Motor."

2. Follow ***Step #4 and Step #5*** under "To Replace Impellor."

3. Loosen the four (4) bolts securing the fan shaft assembly to the base of the dryer.

NOTE: Models with rear access, it may be easier to remove this plate, to remove the two (2) rear fan shaft assembly bolts.

4. Remove the fan assembly through front access hole.

5. Loosen the set screws in each bearing.

6. Loosen the four (4) flange bolts and two (2) pillow block bolts.

7. Using a pulley, remove the bearing needing replacing.

8. Reverse the procedures to reinstall new bearing.

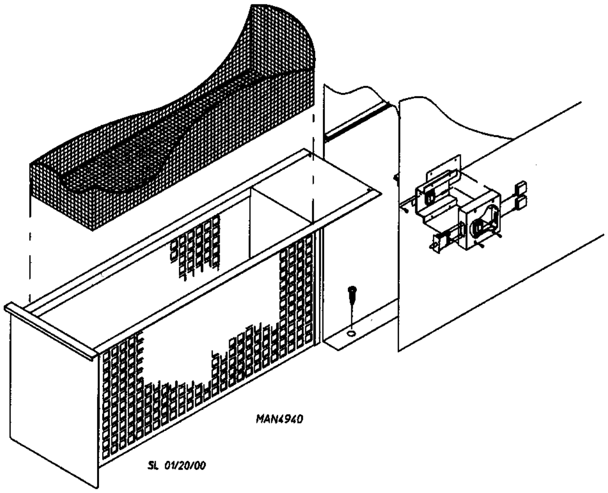
L. IMPELLOR

1. Discontinue electrical power to the dryer.
2. Remove the left side lint wall if necessary for easier access.
3. Remove the six (6) nuts securing the inlet cone to the blower housing.
4. Remove the two (2) left handed jam nuts that hold the impellor to the fan shaft.
5. Remove the impellor, washers, and the key.
6. Replace the impellor, key, washers, left handed jam nuts, and the side panel.
7. Reestablish electrical power to the dryer.

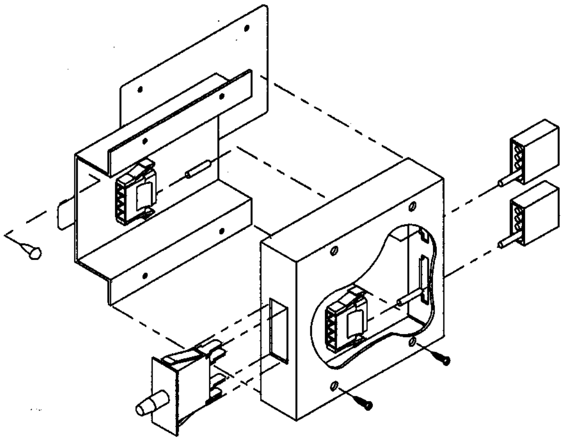
M. LINT DRAWER ASSEMBLY

To Replace Lint Screen

1. Pull out lint drawer.
2. Remove lint screen from lint drawer.
3. Drop new lint screen in place.
4. Slide lint drawer back into dryer.



To Replace Lint Drawer Switch



SL 01/20/00

1. Disconnect electrical power to the dryer.
2. Remove lint drawer and lint door.
3. Disconnect both 4-pin connectors at the rear of the lint switch cover.
4. Remove the one (1) or two (2) screws holding the lint switch cover on.
5. Remove lint switch cover and disconnect the two (2) terminals of the switch.
6. Remove switch by pressing tabs together and push switch out.
7. Install new switch by reversing procedure.

SECTION VI

TROUBLESHOOTING

IMPORTANT: **YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA** (Occupational Safety and Health Administration) **STANDARDS.**

The information provided will help isolate the most probable component(s) associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken/ shorted wire may be at fault where electrical components are concerned ... and not necessarily the suspected component itself. Electrical parts **should always be** checked for failure before being returned to the factory. The information provided **should not be** misconstrued as a handbook for use by an untrained person making repairs.

IMPORTANT: When replacing blown fuses, the replacement ***must be*** of the exact rating as the fuse being replaced.

WARNING: ALL SERVICE and TROUBLESHOOTING ***SHOULD BE*** PERFORMED BY A QUALIFIED PROFESSIONAL or SERVICE AGENCY.

WARNING: WHILE MAKING REPAIRS, OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE DRYER or SPECIFIED IN THIS MANUAL.

Refer to section "Electrical Troubleshooting" for a detailed troubleshooting procedure for electrical components.

A. No display on computer...

1. Open circuit breaker switch or blown fuse.
2. Tripped overload on the blower MTR.
3. Faulty wiring connection.
4. Faulty microprocessor controller (computer).

B. Computer will not accept keyboard (touchpad) entries...

1. Keyboard (touchpad) ribbon is not plugged into computer securely.
2. Keyboard (touchpad) is defective.
3. Faulty microprocessor controller (computer).

C. Dryer will not start, but computer display indicators are on and relay output lights are on...

1. Failed contactors.
2. Failed arc suppressor (A.S.) board.
3. Failed motors.
4. Loose wiring connection.

D. Drive motor runs, burner is on, tumbler (basket) will not turn, and the computer is reading "Rotational Sensor Failure"...

1. Broken, damaged, or loose V-belt.
2. Belts are contaminated (oil, grease, etc.).
3. Loose or broken pulley.

E. Drive motor and blower start, computer display heat indicator is on, and relay output lights are on but there is no heat...

1. Failed HSI (Hot Surface Ignition) module.
2. Failed blower motor contactor.
3. Faulty HSI (Hot Surface Ignition) ignitor.
4. Faulty gas valve.

F. Dryer operates, glo bar lights, but gas does not flow...

1. Dryer gas shut-off valve is closed.
2. Failed gas valve (open coil in valve).
3. Loose wiring connection from HSI (Hot Surface Ignition) module to gas valve (Check voltage at gas valve).
4. Failed HSI (Hot Surface Ignition) module.

G. Dryer operates, glo bar lights but there is no ignition even though gas is evident...

1. Gas pressure is too low...Check manifold pressure and take necessary corrective action.
2. Faulty glo bar, glo bar is not hot enough.
3. Glo bar is out of adjustment (readjust within gas flow).
4. Lint accumulation in burner tubes.
5. Low voltage condition to glo bar.

6. Faulty gas valve.
7. No voltage to gas valve.
8. Poor airflow due to restriction in exhaust or dirty lint screen.

H. Dryer operates but is taking too long to dry...

1. An inadequate exhaust duct work system.
2. Restriction in exhaust system.
3. Insufficient make-up air.
4. Poor housekeeping...Dirty or clogged lint screen.
5. Washing machine extractors are not performing properly.
6. An exceptionally cold/humid or low barometric pressure atmosphere.
7. The supply gas may have a low heating value, check with local gas supplier.
8. Failed temperature sensor (temperature calibration is incorrect).
9. Failed microprocessor controller (computer).

I. Thermal overload for drive motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Bearing failure in drive system.
4. Failed motor.
5. Insufficient make-up air.

J. Overload for impellor (fan) motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Failed motor.
4. Failed overload.
5. Out of balance impellor (fan).
6. Insufficient make-up air.

K. Dryer is tripping the burner hi-limit safety thermostat...

1. Insufficient exhaust duct work...size or restriction in exhaust system.
2. Insufficient make-up air.
3. Lint screen needs cleaning.
4. Damaged impellor (fan).
5. Impellor/fan spinning in the wrong direction.

L. Display reads "Temp Sensor Fail Check Temp Sensor Fuse." Dryer Sensor Circuit Failure...

1. Check 1/8 amp fuse on computer.
2. Faulty microprocessor temperature sensor probe.
3. Open circuit in either one of two (2) wires leading from the sensor probe to the computer.
   a. Connection at sensor bracket assembly connector.
   b. Connection at computer harness connector.

M. Dryer does not start. Display reads "Lint Door"...

1. Lint drawer is open.
2. Faulty lint door switch.
3. Open circuit in lint drawer switch harnesses.

N. There is excessive vibration coming from the tumbler (basket)...

1. Tumbler (basket) is out of adjustment.
2. Drive wheels have failed.
3. Failed tumbler (basket) support.

O. Dryer does not start. Display reads "Main Door"...

1. Main door is open.
2. Faulty main door switch.
3. Open circuit in main door switch harness.

SECTION VII

ELECTRICAL TROUBLESHOOTING

The information provided will help isolate the most probable components associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken or shorted wire may be at fault where electrical components are concerned...not necessarily the suspect component itself.

ELECTRICAL PARTS *SHOULD ALWAYS BE* CHECKED FOR FAILURE BEFORE BEING RETURNED TO THE FACTORY.

The information provided **should not be** misconstrued as a device for use by an untrained person in making repairs. Only properly licensed technicians should service the equipment.

OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE EQUIPMENT or SPECIFIED IN THIS MANUAL WHILE MAKING REPAIRS.

SECTION VIII

PHASE 6 OPL SYSTEM DIAGNOSTICS

> **IMPORTANT: YOU MUST DISCONNECT and LOCKOUT ELECTRIC, GAS, or STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT PER OSHA** (Occupational Safety and Health Administration) **STANDARDS.**

ALL major circuits, including door, microprocessor temperature sensor, heat and motor circuits are monitored. The Phase 6 OPL microprocessor controller (computer) will inform the user, via the L.E.D. (light emitting diode) display of certain failure codes, along with indicators both in L.E.D. (light emitting diode) display and at the output of each relay (and door switch circuit) to easily identify failures.

A. DIAGNOSTIC (L.E.D. [light emitting diode] DISPLAY) FAILURE CODES

1. **SAIL SWITCH FAIL** - this routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is closed prior to start up the display will read "SAIL SWITCH FAIL" along with an audio indication.

2. **No AIRFLOW** - if the sail switch opens during cycle operation the display will read "NO AIRFLOW" along with an audio indication. The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F. Upon failure the machine will shut down and display "No AIRFLOW" with an audio indication.

3. **bURNER SAFETY FAIL** - routine monitors the temperature above the burner. If the Burner Hi-Limit switch opens the display will read "bURNER SAFETY FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F. Upon failure the machine will shut down and display "bURNER SAFETY FAIL" with an audio indication.

4. **dRUM SAFETY FAIL** - this routine monitors the tumbler (basket) temperature if the tumbler (basket) Hi-Limit switch opens prior or during the cycle while the heat was on the machine will display "dRUM SAFETY FAIL." The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F. Upon failure the machine will shut down and display "dRUM SAFETY FAIL" with an audio indication.

5. **NoHEAT** - this routine monitors the gas valve response. If the valve output is discontinued by the ignition control while the heat output cycle is active, the machine will display "NoHEAT," the machine will run with no heat for three (3) minutes or until the temperature drops below 100° F. If the tumbler (basket) temperature is below 100° F upon failure the machine will shut down and display "NoHEAT" with an audio indication.

6. **bURNER CONTRL FAIL** - this routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the Phase 6 microprocessor controller (computer) determines the ignition control has failed. If this occurs when the cycle is active the machine will display "bURNER CONTRL FAIL." If the tumbler (basket) temperature is above 100° F the machine will continue to display "bURNER CONTRL FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F. If the tumbler (basket) temperature is below 100° F upon failure the machine will shut down and display "bURNER CONTROL FAIL" with an audio indication.

7. **bURNER FLAME FAIL** - this routine allows two (2) Flame Out retries to occur before proceeding into the error. The count of two (2) will be established every time the call for heat was to occur. Only if it reaches the count of two (2) before the tumbler (basket) temperature has reached the set temperature will this error be triggered. The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F. If the tumbler (basket) temperature is below 100° F upon failure, the machine will shut down and display "bURNER FLAME FAIL" with an audio indication. This process will occur every time the heat output is active.

8. **MAIN dOOR** - this monitors the door circuit. If the machine was not active and the main door was opened the display would read "REAdY." If a program attempt was made with the main doors open the display will read "MAIN dOOR" with an audio indication. If the machine is active and the main door was opened the display would read "MAIN dOOR" with no audio indication and the dryer will shut down. Once the main door has closed the display would read "PRESS START" press the "ENTER/START" ☐ Key and it will continue the programmed cycle.

9. **LINT dOOR** - this monitors the lint drawer/door circuit. If the machine was not active and the lint drawer/door was opened the display would read "REAdY." If a program attempt was made with the lint drawer/door open the display would read "LINT dOOR" with an audio indication. If the machine was active and the lint drawer/door was opened the display would read "LINT dOOR" with no audio indication and the dryer will shut down. Once the lint door was closed the display would read "PRESS START" press the "ENTER/START" ☐Key and it will continue the programmed cycle.

10. **TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE** - this routine monitors the tumbler (basket) temperature. When the temperature sensor or fuse opens with the machine not active the display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the machine was active at the time that the temperature sensor or fuse opened the display would read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE." If the tumbler (basket) temperature is above 100° F the machine will continue to display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication and run with no heat for three (3) minutes or until the temperature drops below 100° F. If the tumbler (basket) temperature is below 100° F upon failure the machine will shut down and display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. The display will continue to read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" an audio indication will sound for approximately 5 seconds, every 30 seconds until the problem is corrected or the power to the dryer is discontinued (and the problem is corrected).

NOTE: Once the Phase 6 microprocessor controller (computer) detects a problem in the heat circuit, it updates every 30 seconds, so that if the problem was a loose connection in the circuit which corrected itself, the "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" condition would automatically be cancelled and the display will return to "REAdY."

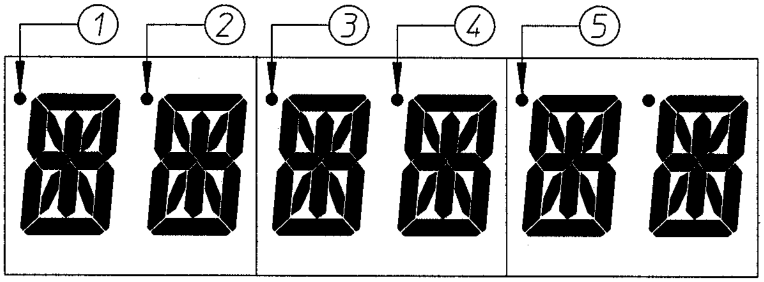
11. **ROTATE SENSOR FAIL** - indicates a rotational sensor circuit failure meaning that there is a fault somewhere in the tumbler (basket) rotation circuit, or the Phase 6 OPL microprocessor controller (computer) program related to this circuit (Program Location 2) is set incorrectly. In the active mode it **should be** (ROTATE SENSOR ACTIVE), if the dryer is not equipped with the optional rotational sensor it **should be** set in the non active mode (No ROTATE SENSOR).

NOTE: **RPM** - This routine monitors the timing response from the existing rotational sensor input and derives a RPM measurement. To display this RPM measurement (press the "ENTER/START" ⊡ Key once and release, then press the "ENTER/START" ⊡ Key a second time and hold ...this will display the RPM measurement). The rotational sensor ***must be*** active for operation of this feature.

12. **CHECK MAIN FUSE** - indicates that the circuit fuse protection which is located on the back side of the Phase 6 microprocessor controller (computer) the display would read "CHECK MAIN FUSE." If the display continues after the fuse has been replaced then it is the fault of the Phase 6 microprocessor controller (computer).

B. L.E.D. (light emitting diode) DISPLAY INDICATORS

The L.E.D. (light emitting diode) indicator dots located on the top portion of the display indicate the various Phase 6 OPL computer output functions while a cycle is in progress. These indicator dots (as shown in the illustration below) **DO NOT** necessarily mean that the outputs are functioning. They are only indicating that the function output **should be** active (on).



MAN3450

1. **L.E.D. DISPLAY INDICATOR NUMBER 1**
   a. For Optional Reversing Models:
      1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the forward mode (clockwise [CW] direction).

2. **L.E.D. DISPLAY INDICATOR NUMBER 2**
   a. For Optional Reversing Models:
      1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the reverse mode (counterclockwise [CCW] direction).

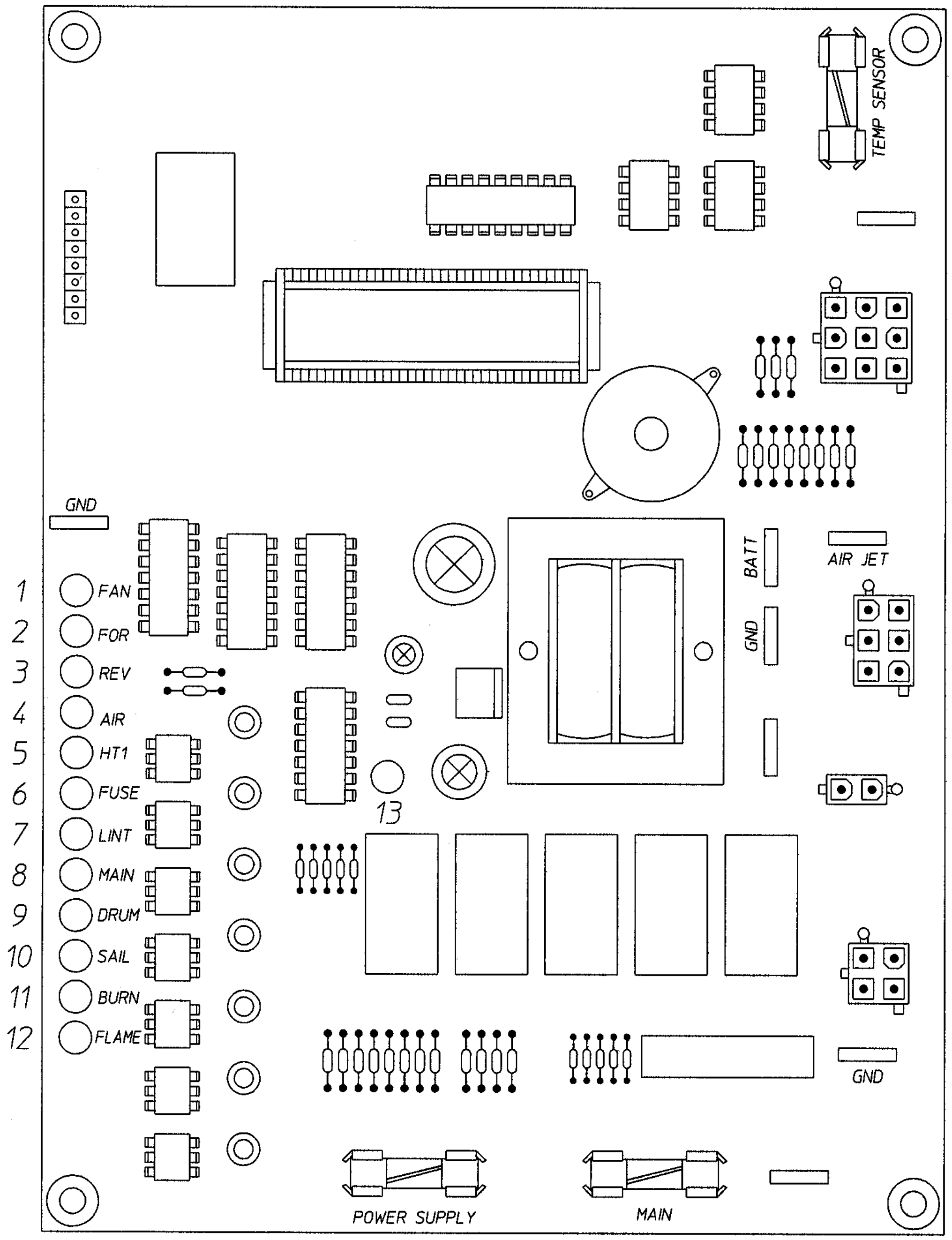
3. **L.E.D. DISPLAY INDICATOR NUMBER 3**
   a. Heat Circuit Indicator:
      1) This indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating circuit to be active (on).

4. **L.E.D. DISPLAY INDICATOR NUMBER 4**
   a. On Indicator
      1) This indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle program is active, the indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time program.

5. **L.E.D. DISPLAY INDICATOR NUMBER 5**
   a. Air Jet Circuit Indicator - ***OPTIONAL***
      1) This indicator dot is on at the end of the dryer cycle for approximately 60 seconds.

C. PHASE 6 OPL MICROPROCESSOR CONTROLLER RELAY OUTPUT L.E.D. (light emitting diode) INDICATORS

There are a series of five (5) L.E.D. (light emitting diode) indicators (ORANGE LIGHTS) located at the backside are of the Phase 6 OPL microprocessor controller (computer). These are identified or labeled (from top to bottom in the illustration below as: FAN-BLOWER, FOR-FORWARD, REV-REVERSE, AIR-AIR-JET, HT1-HEAT OUTPUT. There are a series of seven (7) L.E.D. (light emitting diode) indicators (RED LIGHTS) FUSE-MAIN FUSE, LINT- LINT DOOR, MAIN-MAIN DOOR, DRUM-TUMBLER (BASKET) HI-LIMIT, SAIL-SAIL SWITCH, BURN-BURNER HI-LIMIT, FLAME-FLAME PROBE). The L.E.D. (light emitting diode) in the center of the board (RED LIGHT) indicates power supplied to the Phase 6 OPL microprocessor controller (computer). These L.E.D.'S (light emitting diode's) indicate the inputs and outputs of the Phase 6 OPL microprocessor controller (computer) as it monitors the safety circuits.


TEMP SENSOR
GND
1
FAN
2
FOR
3
REV
4
AIR
5
HT1
6
FUSE
7
LINT
8
MAIN
9
DRUM
10
SAIL
11
BURN
12
FLAME
13
BATT
GND
AIR JET
GND
POWER SUPPLY
MAIN

MAN3449

SECTION IX

L.E.D. DISPLAY/CODES

The L.E.D. (light emitting diode) display informs the operator of cycle status, program verification, and displays important diagnostic codes and fault codes.

A. L.E.D. (light emitting diode) DISPLAY OPERATING STATUS

1. Cycles in Progress

a. While the dryer is operating, the L.E.D. (light emitting diode) display will read which cycle is in progress. For example, in Drying Cycle (Mode), the L.E.D. (light emitting diode) display will read "dRYING" and in the Cool Down Cycle (Mode) the L.E.D. (light emitting diode) display will read "COOL."

2. Cycle Status

a. While a cycle is in progress, the L.E.D. (light emitting diode) display will show the progress of the cycle (load) that is being processed.

1) Automatic Drying Cycle

a) While a cycle is in progress the cycle status, elapse time and dRUM TEMP will be displayed with [PL5] FLASH active (NFLASH active the "ENTER/START" key **must be** pressed to display dRUM TEMP). Approximately half way through the drying cycle, the cycle status portion of the L.E.D. (light emitting diode) will display (i.e. dRY LEVEL 68 PcT). The display will change and count upward until the percentage of extraction programmed is reached.

2) Timed (Manual) Drying Cycle

a) While a cycle is in progress the cycle status, time remaining and dRUM TEMP will be displayed with [PL5] FLASH active (NFLASH active the "ENTER/START" key **must be** pressed to display dRUM TEMP).

3. Alternate Display Programs

a. Programming allows for the L.E.D. (light emitting diode) display to read just the tumbler (basket) temperature or flash back and forth from Cycle in Progress or tumbler (basket) Temperature while the dryer cycle is in progress. Unless otherwise specified at the time of ordering the dryer, the Phase 6 OPL microprocessor controller (computer) is programmed not to flash and to read the Cycle in Progress.

NOTE: Refer to the illustration on the following page for details.

4. Indicator Dots (refer to **page 48**)

a. Located at the top of the L.E.D. (light emitting diode) display is a series of dots which indicate the various Phase 6 OPL microprocessor controller (computer) output functions while a cycle is in progress.

1) Illustration No. 1

   a) **FORWARD INDICATOR** - this indicator dot is functional for dryer models with the Reversing Action Option ONLY. This indicator dot will be on when the tumbler (basket) is in the forward (clockwise [CW]) direction. Additionally, when the Anti-Wrinkle Program is active, this indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time Program (Mode).

2) Illustration No. 2 (refer to **illustration below**)

   a) **REVERSING INDICATOR** - this indicator dot is functional for dryer models with the Reversing Action Option ONLY. This indicator dot will be on when the tumbler (basket) is in the reverse (counterclockwise [CCW]) direction.

3) Illustration No. 3 (refer to **illustration below**)

   a) **HEAT INDICATOR** - this indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating unit to be active (on).

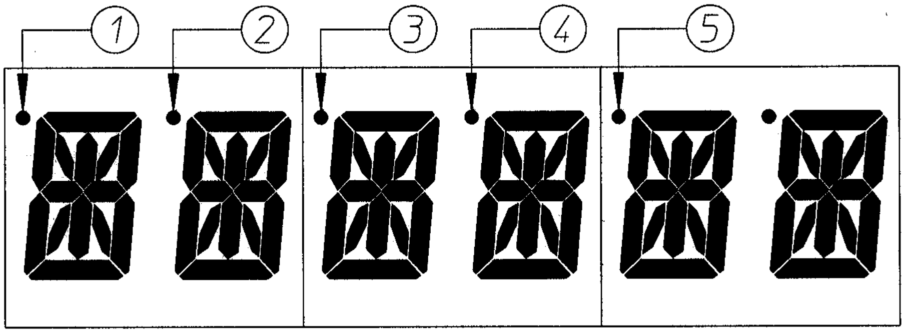
4) Illustration No. 4 (refer to **illustration below**)

   a) **ON INDICATOR** - this indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle Program is active, this indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time Program.

5) Illustration No. 5 (refer to **illustration below**) *OPTIONAL*

   a) **AIR JET CIRCUIT INDICATOR** - this indicator dot is on at the end of the drying cycle for approximately sixty (60) seconds.

B. PHASE 6 OPL MICROPROCESSOR L.E.D. (light emitting diode) DISPLAYS



MAN3450

1. Tumbler (basket) in **FORWARD MODE** (clockwise [CW]) **INDICATOR**
2. Tumbler (basket) in **REVERSE MODE** (counterclockwise [CCW]) **INDICATOR**
3. **HEAT ON INDICATOR**
4. **ON INDICATOR** (dryer is in operation mode)
5. **AIR JET INDICATOR** - *OPTIONAL*

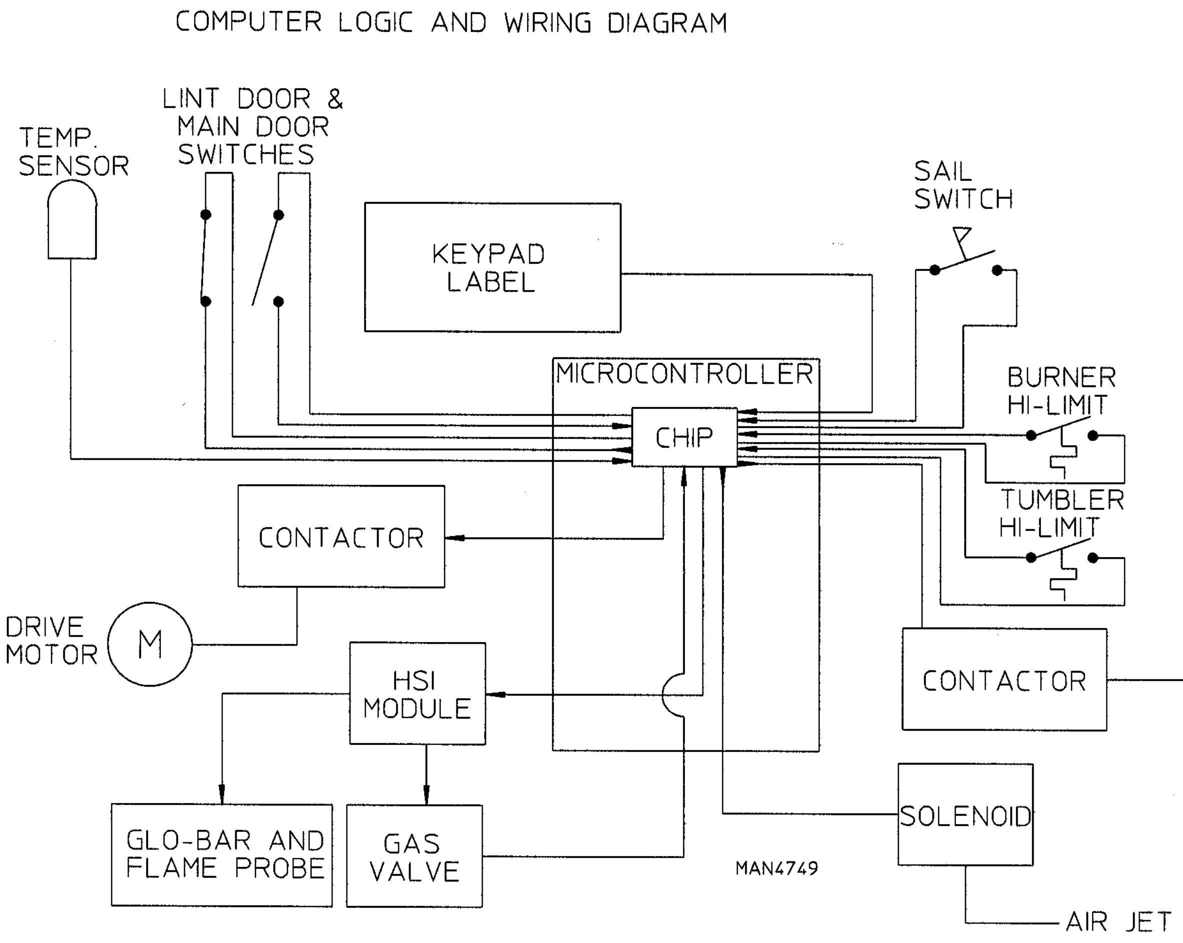
C. L.E.D. CODES

1. Display Codes

A	SLOPE FACTOR
ALL REV	ALWAYS REVERSING
ANTI WRINKL dELAY TIME	ANTI-WRINKLE DELAY TIME
ANTI WRINKL GUARd ACTIVE	ANTI-WRINKLE PROGRAM ACTIVE
ANTI WRINKL GUARd ON TIME	ANTI-WRINKLE GUARD ON TIME
AUTO CYCLE	AUTOMATIC MODE
b	HEAT LOSS (OFF SET) FACTOR
bURNER CONTROL FAIL	GAS ONLY ... POWER (24VAC) IS NOT EVIDENT AT GAS VALVE
bURNER FLAME FAIL	NO BURNER FLAME SENSED
bURNER SAFETY FAIL	GAS/ELECTRIC ONLY ... BURNER/OVEN OPEN HI-LIMIT CIRCUIT
bUZZ	BUZZER (TONE)
bUZZ TIME	BUZ TIME
°CEL	DEGREE IN CELSIUS
CHECK MAIN FUSE	MAIN FUSE FAILURE
CLEAN LINT	PROMPT TO CLEAN LINT SCREEN, DRYER CYCLE LOCKOUT
COOL	COOL DOWN CYCLE IN PROGRESS
COOL TIME__M	COOL DOWN TIME
COOL TEMP___	COOL DOWN TEMPERATURE
CYCLEA	PREPROGRAMMED CYCLE A
CYCLEb	PREPROGRAMMED CYCLE B
CYCLEC	PREPROGRAMMED CYCLE C
CYCLEd	PREPROGRAMMED CYCLE D
CYCLEE	PREPROGRAMMED CYCLE E
CYCLEF	PREPROGRAMMED CYCLE F
dONE	DRYING or COOLING CYCLE COMPLETE OR DRYER IN ANTI-WRINKLE MODE
dRYING	DRYING CYCLE IN PROGRESS
dRY LEVEL___	DRYNESS LEVEL (PERCENTAGE OF EXTRACTION) (NUMERICAL VALUE)
dRY TEMP F___	DRYING TEMPERATURE
dRY TIME__M	LENGTH OF DRYING CYCLE
dRUM SAFETY FAIL	TUMBLER (BASKET) HI-LIMIT CIRCUIT IS OPEN
ELAPSE TIME___MIN	CYCLE DISPLAY TIME
ELECTRIC	SPECIFIC HEAT TYPE OF DRYER ... ELECTRICALLY HEATED
F	FABRIC TEMPERATURE
°FAR	DEGREE IN FAHRENHEIT
FLASH	FLASH DISPLAY ACTIVE
GAS	SPECIFIC HEAT TYPE OF DRYER ... GAS HEATED
HOT	INDICATES AN OVERHEAT CONDITION
LINT dOOR	LINT DRAWER / DOOR CIRCUIT IS OPEN OR FAULT IN THE A.C. SWITCH CIRCUIT
LINT COUNT	DRYING CYCLES RANGE FROM 1-10 CYCLES BEFORE CLEAN LINT DISPLAY
__M REMAIN	CYCLE DISPLAY TIME
MAIN dOOR	DOOR CIRCUIT IS OPEN OR FAULT IN THE A.C. DOOR SWITCH CIRCUIT
MANUAL CYCLE	MANUAL MODE
MAX ANTI WRINKL GUARd	MAXIMUM GUARD TIME
NFLASH	FLASH DISPLAY NOT ACTIVE
NoAIR FLOW	SAIL SWITCH OPEN
NoANTI WRINKL GUARd	ANTI-WRINKLE PROGRAM IS NOT ACTIVE
NoBUZZ	NO BUZZER (TONE)
NoHEAT	GAS ONLY ... IGNITION ATTEMPT FAILURE
NoREV	NO REVERSE
No ROTATE SENSOR	NO ROTATIONAL SENSOR SELECTED
PROGRM	PROGRAM MODE
REAdY	NO CYCLE IN PROGRESS
ROTATE SENSOR ACTIVE	ROTATIONAL SENSOR SELECTED
ROTATE SENSOR FAIL	ROTATIONAL SENSOR CIRCUIT FAILURE
__RPM	MONITORS TUMBLER (BASKET) RPM WITH ROTATIONAL SENSOR CIRCUIT ACTIVE
SAIL SWITCH FAIL	GAS/ELECTRIC ONLY. ATTEMPT MADE TO START DRYER WITH SAIL SWITCH DISABLED IN CLOSED POSITION
SELREV.	SELECT REVERSE
SPIN TIME	SPIN TIME
START GUARd	START ANTI WRINKLE GUARD CYCLE
STEAM	SPECIFIC HEAT TYPE OF DRYER ... STEAM HEATED
STOP TIME	STOP TIME
TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE	FAULT IN M.P. HEAT SENSING CIRCUIT

D. COMPUTER LOGIC and WIRING DIAGRAM

1. Operator enters desired selection(s).


COMPUTER LOGIC AND WIRING DIAGRAM
TEMP. SENSOR
LINT DOOR & MAIN DOOR SWITCHES
KEYPAD LABEL
SAIL SWITCH
MICROCONTROLLER
CHIP
BURNER HI-LIMIT
TUMBLER HI-LIMIT
CONTACTOR
DRIVE MOTOR
M
HSI MODULE
CONTACTOR
BLOWER MOTOR
M
GLO-BAR AND FLAME PROBE
GAS VALVE
SOLENOID
MAN4749
AIR JET

2. Information entered is sent to the microcontroller via the keyboard (touchpad).
3. The input information is sorted/processed and executed by the microcomputer chip.
4. The microcomputer output signal activates the contactors and HSI (Hot Surface Ignition) module which control machine functions.

> **NOTE:** When contacting **ADC** with electrical questions, please have on hand the correct wiring diagram number for your particular machine. This number is located on the top right-hand corner of the diagram. It is a six (6) digit number followed by a letter to distinguish the revision dates (refer to illustration).

The wiring diagrams used in Troubleshooting are specifically for dryers manufactured at the time of publishing. Your particular model may vary slightly depending on the date of manufacturing and options available. The correct wiring diagram and number is either taped to the rear of the control door on each dryer, or placed in the control box. If your particular diagram is lost or unreadable, call **ADC** with the serial number of the dryer. **ADC** will be more than happy to send you a diagram by fax or mail.

A. No Display Condition...

1. Check main fuses or circuit breaker.
2. Check blower motor overload...If tripped, reset.
3. Check fuse 1 or fuse 2 and if either are blown, replace.
4. Check to make sure the "EMERGENCY STOP" (E-Stop) button is not depressed.
5. Between pin 1 and ground of the 15 pin connector you **should be** getting 24 V.
6. If no voltage is present at pin 1 and ground, double check ***Step #1 through Step #4***.
7. Take voltage reading across the microprocessor 9 pin connector nos. 1 and 2.

   If there is voltage, replace the computer.

   If there is no voltage, there is a faulty wire(s) or termination(s) between the 15 pin connector and the microprocessor.

NOTE: In this next section ALL voltage checks ***must be*** done in the operating mode with the appropriate microprocessor dot on!! Also appropriate LED (light emitting diode) output light on!!

NOTE: In this next section when checking for voltage you are looking for 24 AC volts unless otherwise specified.

B. Drive motor reverses but does not go forward, blower motor runs...

1. If computer dot (first dot on the left) does not come on, replace the computer.
2. Check for voltage across the coil of the forward contactor located in the rear panel box. The contactor according to your diagram is marked CR2. The coil markings A1 and A2.

   If voltage is present, there is a faulty wire(s) or termination(s) between BS2 and contactor coil (CR2).

   If there is voltage across the two (2) BS2 terminals and no voltage across the two (2) BS2 terminals, replace the arc suppressor (A.S.) board.

   If there is voltage across the two (2) AS2 terminals on the arc suppressor (A.S.) board, the problem is a faulty wire(s) or termination(s) between the AS2 board and the 9 pin computer connector no. 8, or faulty computer.

C. Drive motor works in forward mode but does not reverse, blower motor runs...

1. If computer dot (second one from left) does not come on, check program to see if set for reverse.
2. If set for reverse, replace computer.
3. Check for voltage across the coil of the reversing contactor located in the rear panel box. The contactor according to your diagram is CR3, also the markings on the coil are A1 and A2.

If there is voltage, replace the coil or the complete contactor.

If there is no voltage, check for voltage across the two (2) BS3 terminals on the arc suppressor (A.S.) board.

If there is voltage across the two (2) BS1 terminals and no voltage across the coil of the reversing contactor (A1 and A2), the problem is faulty wire(s) or termination(s) between BS1 and the contactor coil.

4. If there is no voltage between the two (2) BS3 terminals on the arc suppressor (A.S.) board, check for voltage across the two (2) AS3 terminals on the board.

   If there is voltage across the two (2) AS3 terminals and no voltage across the two (2) BS3 terminals, replace the arc suppressor (A.S.) board.

   If there is no voltage across the two (2) AS3 terminals, the problem is faulty wire(s) or termination(s) between the arc suppressor (A.S.) board and the computer 9 pin connector no. 9, or a faulty computer.

D. Blower motor does not operate, drive motor runs...

1. Check for voltage across terminals A1 and A2 of the impellor contactor. This is the single contactor in the rear control box.

   If voltage is present check for voltage across the blower motor. If there is voltage at the blower motor replace the motor.

   If there is no voltage at the blower motor, problem is faulty wire(s) or termination(s) between the contactor and the motor.

2. If there is no voltage present at A1 and A2 of the contactor, check for voltage across the two (2) BS1 terminals of the arc suppressor (A.S.) board.

   If there is voltage present at the two (2) BS1 terminals, problem is faulty wire(s) or termination(s) between the two (2) BS3 terminals and the coil (A1 and A2) terminals.

   If there is no voltage across the two (2) BS1 terminals, check for voltage across the two (2) AS1 terminals.

   If there is voltage across the two (2) AS1 terminals and there is no voltage between the two (2) BS1 terminals, replace the arc suppressor (A.S.) board.

3. If there is no voltage across the two (2) AS1 terminals, problem is faulty wire(s) or termination(s) between the two (2) AS1 terminals and the computer board 9 pin connector no. 7, or faulty computer.

E. "No Heat" drive and blower motors run, display reads normal (Gas Models)...

1. Check for voltage across the six pin computer connector between pin 5 and ground.

   If no voltage is present, problem is faulty computer or **should be** displaying an error code for an open or faulty heat safety (Sail Switch, Burner Hi-Limit, Tumbler [Basket] Hi-Limit).

2. If voltage is present, check for voltage across HSI (Hot Surface Ignition) module "W" and "GND."

If no voltage is present, check voltage at pin 5 and 8 of the J2 connector. Which is located in the front electrical box. If voltage is present then problem is a broken wire between 9 pin connector and HSI (Hot Surface Ignition) module or faulty termination.

If no voltage is present, then there is a broken wire between computer and 9 pin connector or faulty termination.

F. "No Heat" drive and blower motors run, display reads normal (Steam Models)...

1. Check for voltage across pin 1 and 2 of the J6 connector.

   If no voltage is present, check for voltage on the J10 pin 5 to ground.

2. If voltage is present, problem is a faulty wire or termination. Between pin 5 of the J10 connector to pin 1 of J6 connector.

   If no voltage is present, problem is computer board.

G. "Lint Door" condition...

NOTE: Make sure lint drawer is closed. Also, if checking the switch, the plunger ***must be*** depressed.

Check L.E.D. (light emitting diode) input light "lint door" on component side of the computer. If light is on, replace computer.

1. Check voltage (24 VAC) across 2 pin connector, pin 3 and ground. This connector is located at the lint drawer switch box.

   If voltage is present, problem is faulty wire(s) or termination(s) between computer pin #4 of 9 pin connector.

   If no voltage is present, check for voltage across the 9 pin modular connector nos. 3 and ground.

   If voltage is evident at both points, problem is faulty computer.

H. "Main Door" condition...

NOTE: Make sure main door is closed. Also, if checking the switch, the plunger ***must be*** depressed.

Check L.E.D. (light emitting diode) input light "main door" on component side of the computer. If light is on, replace computer.

1. Check voltage (24 VAC) across 2 pin connector (J5) between pin 1 and ground.

   If voltage is present, problem is faulty wire or termination between the 9 pin computer connector pin 6 and the opposite side of door switch.

   If no voltage is present, check for voltage across pin 5 of the 9 pin computer connector and ground.

   If there is no voltage at this point then problem is faulty computer.

   If there is voltage at this point then problem is broken wire or faulty termination between pin 5 of 9 pin computer connector and pin 1 of J5 connector.

I. Microprocessor reads "Temp Sensor Fuse."

NOTE: Before continuing with this section check the .125 MA fuse on the computer board.

1. Replace the temperature sensor underneath the tumbler (basket) on a bracket (the bullet shaped device).

2. If it still reads "Temp Sensor Fuse," unplug the 4 pin connector from the temperature sensor bracket. Also, unplug the microprocessor 4 pin connector from the computer board. Where the white/red striped wire is going into the connector, take a continuity reading across the wire and that same wire from the 4 pin connector that you unplugged earlier in this paragraph.

   If there is no continuity, check for break in wire, a short to the ground, loose termination(s), or even replace the wire.

   If there is continuity, do the same thing to the black wire right next to the white/red striped wire in the 4 pin connector.

   If there is no continuity, check for break in wire, a short to ground, loose termination(s), or even replace the wire.

   If there is continuity, computer board is faulty.

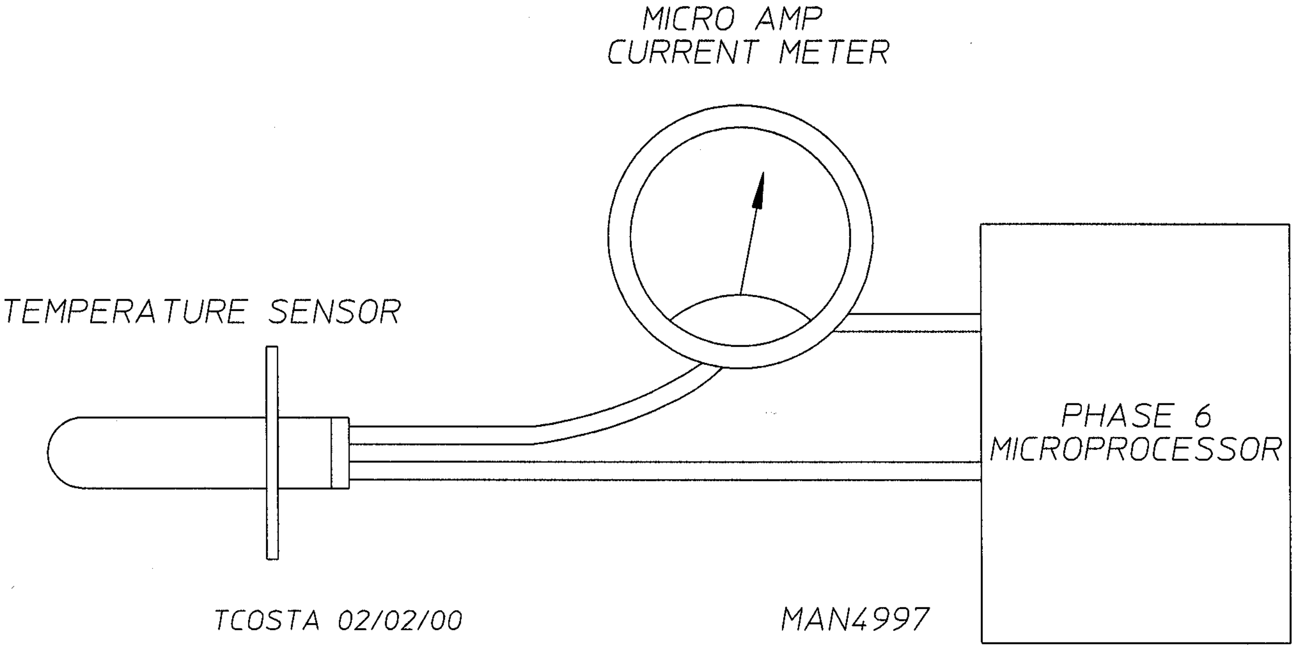
   a. To check temperature sensor

      1) Place your digital multimeter on diode check range.

      2) Place the red lead of your meter on the "black" wire of the temperature sensor and the black lead of your motor on the white lead of your temperature sensor. At this point you should get no response from the meter (infinite). If you get a reading the temp sensor is defective.

      3) Reverse leads to temp sensor matching the black of the meter to the "black" wire of the temperature sensor and the red of the meter with the "white" wire of the temperature sensor. At this point you should measure approximately 1.8 V. This is the turn on voltage of the device. If you hold the temp sensor in your hands and warm it, the reading will decrease corresponding to a higher current flow.

      4) The Phase 6 Microprocessor Controller (computer) is powered by 24 VAC on pin #12 of the J7 9 pin connector. The temperature sensor probe is a bullet shaped device that is located above the lint basket. This temperature probe is used to sense the temperature in the exhaust of the dryer. The temperature sensor is a two (2) terminal monolithic integrated circuit temperature transducer that provides an output current proportional to absolute temperature. The transducer acts as a high impedance temperature dependant current source of 1 µA/°K. The typical accuracy of this probe is +/- 1.5° C (+/- 2.7° F). In a case where the temperature reaches 220° F (104° C), the Phase 6 microprocessor (computer) will shut down and the L.E.D. (light emitting diode) will display "Hot." To restart a cycle the "CLEAR/STOP" button **must first be** pressed.


MICRO AMP
CURRENT METER
TEMPERATURE SENSOR
PHASE 6
MICROPROCESSOR
TCOSTA 02/02/00
MAN4997

$$°F = \frac{9}{5}(°C + 32)$$

$$°C = \frac{5}{9}(°F - 32)$$

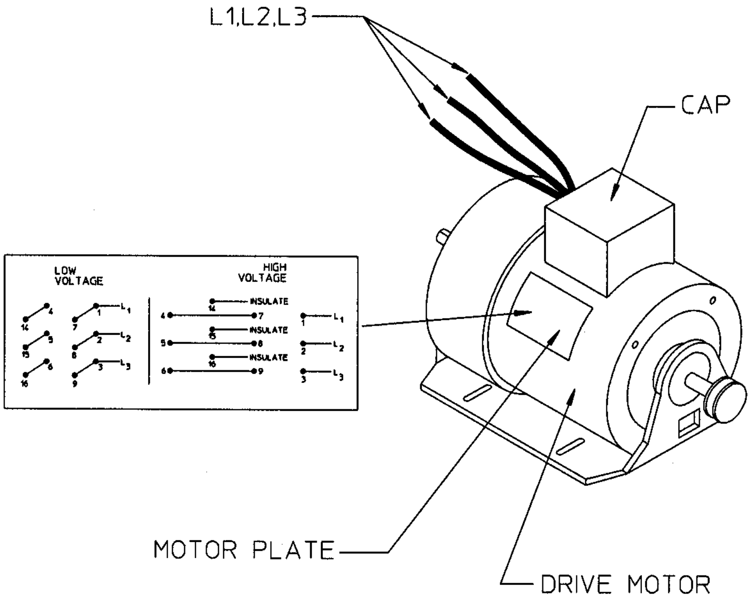
$$\text{Temperature Sensor Current} = \frac{°C + °K\ (273.15)}{1{,}000{,}000} = \text{microamps } (\mu A)$$

SECTION X

TECHNICAL INFORMATION

The following section contains various technical information important to the service person in servicing and maintaining the dryer.

A. MOTOR PLATE (HIGH and LOW VOLTAGE)


L1,L2,L3
CAP
LOW VOLTAGE
HIGH VOLTAGE
14
4
7
1
L1
15
5
8
2
L2
16
6
9
3
L3
INSULATE
14
4
7
1
L1
INSULATE
15
5
8
2
L2
INSULATE
16
6
9
3
L3
MOTOR PLATE
DRIVE MOTOR

MAN0552

The motor plate is located on the side of the drive motor (refer to illustration) and contains a graphical representation of the motor wiring for both low voltage rating and high voltage rating.

Removing the cap reveals the wiring to the motor. On each wire there is a number which corresponds to the numbers on the motor plate. Depending on whether the dryer is operating on low voltage or high voltage, the wiring should match the motor plate as follows:

The dots and lines represent connections (refer to illustration). **For example:**

On Low Voltage - wire #14 is connected to wire #4

- wire #1 is connected to wire #7, which in turn are both connected to L1

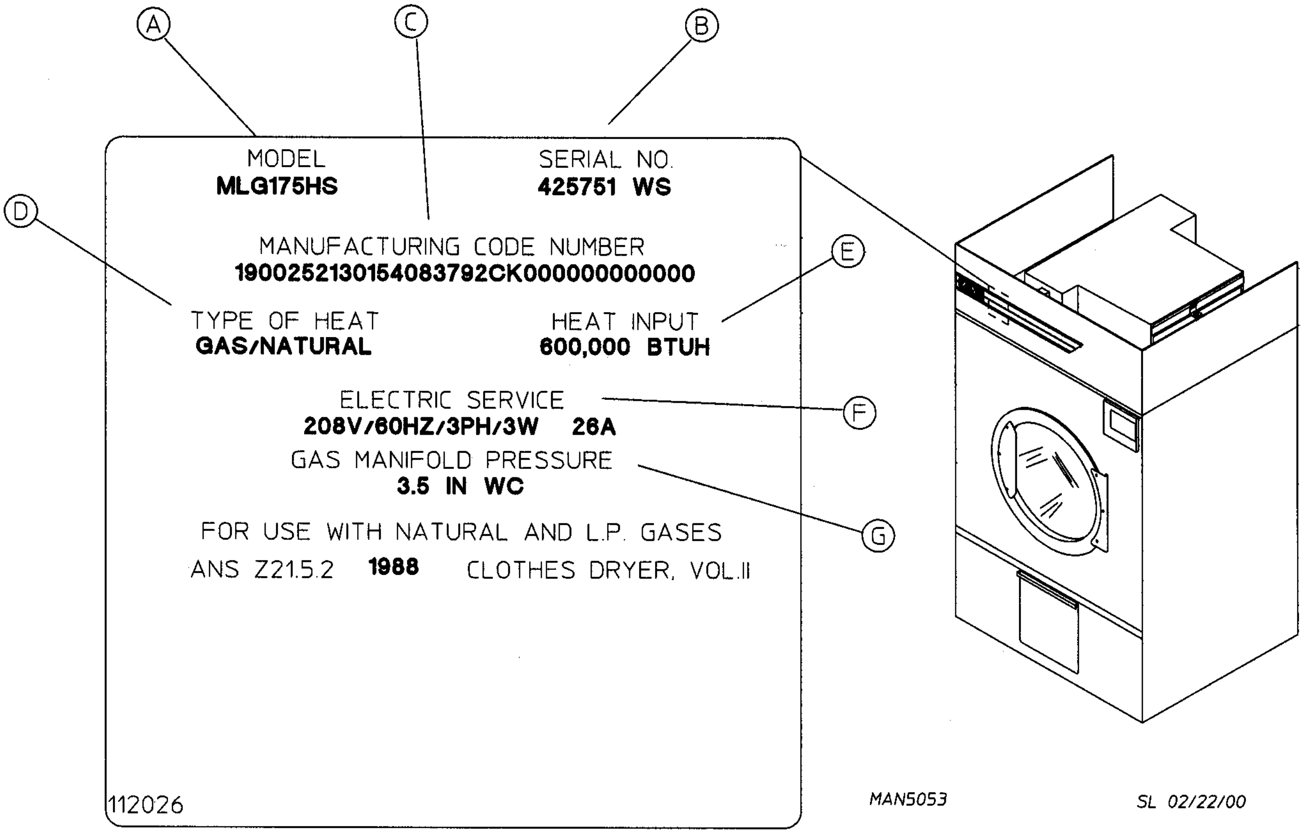
On High Voltage - wire #14 is insulated or capped

- wire #4 is connected to wire #7

- wire #1 is connected to L1

B. DATA LABEL

Contacting **American Dryer Corporation (ADC)**



MODEL
MLG175HS

SERIAL NO.
425751 WS

MANUFACTURING CODE NUMBER
1900252130154083792CK000000000000

TYPE OF HEAT
GAS/NATURAL

HEAT INPUT
600,000 BTUH

ELECTRIC SERVICE
208V/60HZ/3PH/3W 26A

GAS MANIFOLD PRESSURE
3.5 IN WC

FOR USE WITH NATURAL AND L.P. GASES
ANS Z21.5.2 **1988** CLOTHES DRYER, VOL.II

When contacting **ADC**, certain information is required to insure proper service/parts information. This information is on the data label, located on the top right corner of the dryer, viewed from the rear (refer to illustration). When contacting **ADC**, please have the model number and serial number readily accessible.

Information on the Data Label

A. Model number — The model number is an **ADC** number which describes the size of the dryer and the type of heat (gas or steam).

B. Serial number — The serial number allows **ADC** to gather information on your particular dryer.

C. Manufacturing code number— The manufacturing code number is a number issued by **ADC** which describes **ALL** possible options on your particular model.

D. Type of heat— Describes the type of heat; gas (natural or L.P.), steam or electric.

E. Heat input— (For gas dryers) describes the heat input in British Thermal Units.

F. Electric service— Describes the electric service for your particular models.

G. Gas manifold pressure— Describe the manifold pressure as taken at the gas valve pressure tap (refer to "Using a Manometer").

C. USING A MANOMETER

How To Use A Manometer

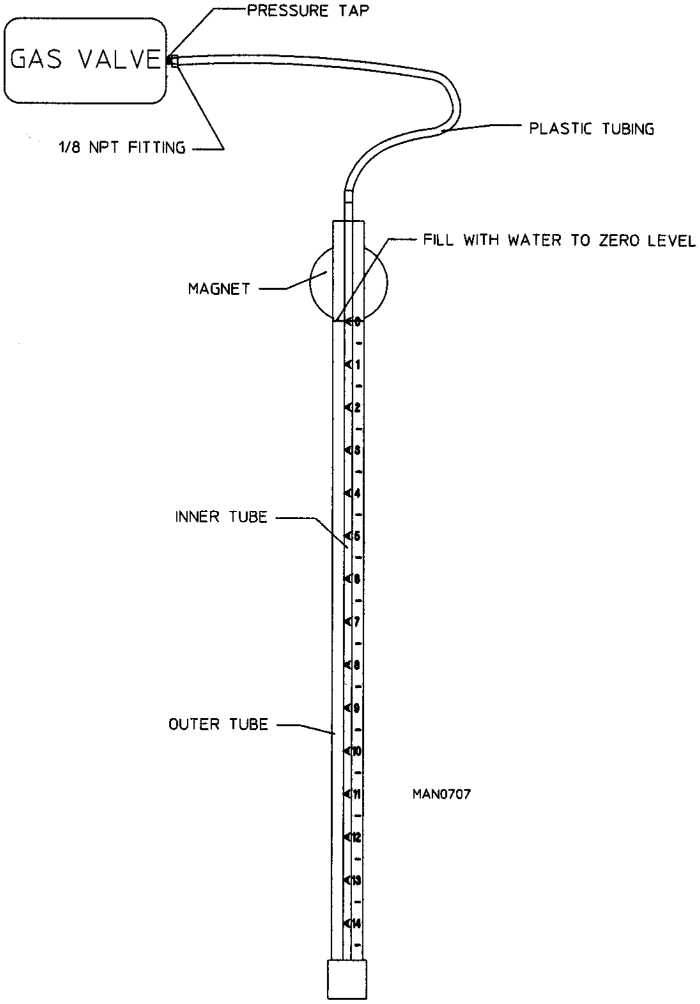
1. With dryer in non-operating mode, remove plug on the gas valve pressure tap.
2. Attach plastic tubing to pressure tap. Fitting is supplied with manometer (refer to illustration).
3. Attach manometer to dryer using magnet.

NOTE: Place manometer in a position so that readings can be taken at eye level.

4. Fill manometer with water, as shown in illustration, to the zero level.
5. Start dryer. With burner on, take a reading.
    a. Read water level at the inner tube. Readings **should be** taken at eye level.
    b. Correct readings **should be**:

NATURAL GAS: 3.5 Inches W.C.
L.P. GAS: 10.5 Inches W.C.

6. If water column pressure is incorrect refer to "TO ADJUST GAS PRESSURE."
7. Reverse procedure for removing manometer.


PRESSURE TAP
GAS VALVE
PLASTIC TUBING
1/8 NPT FITTING
FILL WITH WATER TO ZERO LEVEL
MAGNET
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
INNER TUBE
OUTER TUBE
MAN0707

D. TOOL LIST

Straight Head Screwdriver

Phillips Head Screwdriver

Sensor Pin and Socket Tool (P/N 122801)

Pliers

1/4" Nut Driver

3/8" Open End Wrench

5/8" Open End Wrench

5/8" Deep Socket Wrench

3/8" Socket Wrench

1/2" Socket or Open End Wrench

1/4" Open End Wrench

5/16" Socket or Open End Wrench

1/2" Socket Wrench

7/16" Socket or Open End Wrench

5/16" Nut Driver

12" Pipe Wrench (2)

1/8" "T" Shaped or "L" Shaped Allen Wrench

3/16" "T" Shaped or "L" Shaped Allen Wrench

Wire Cutters

1/2" Allen Wrench

3/8" Allen Wrench

Channel Locks

Manometer (**ADC** P/N 122804)

MP Pin Extraction Tool (**ADC** P/N 122800)

ML-190 Table of Contents

SECTION I
IMPORTANT INFORMATION F3
A. Safety Precautions F3

SECTION II
ROUTINE MAINTENANCE F5
A. Cleaning F5
B. Adjustments F6
C. Lubrication F6

SECTION III
INSTALLATION REQUIREMENTS F7
A. Enclosure, Air Supply, and Exhaust Requirements F7
B. Electrical and Gas Requirements F7
C. Operational Service Check Procedure F8

SECTION IV
DESCRIPTION OF PARTS F10
A. Control Panel (Microprocessor) F10
B. Control Box F10
C. HSI Module (Gas Models Only) F10
D. Gas Burner Assembly F11
E. Drive Motor F11
F. Blower Motor and Impellor (Gas and Steam) F11
G Speed Reducing Shaft F12
H. Tumbler (Basket) Bearing Arrangement F12
I. Tumbler (Basket) F12
J. Main Door Switch F13
K. Sail Switch (Gas Models Only) F13
L. Hi-Limit (Gas Models Only) F13
M. Manual Reset Thermostat F14
N. Lint Drawer F14
O. Lint Drawer Switch F14
P. Steam Damper System F15
Q. Compressed Air Requirements F15

SECTION V

SERVICING F16

- A. Computer Controls F17
- B. Ignition Controls F18
- C. Thermostats F21
- D. Sail Switch Assembly (Gas Models Only) F23
- E. Front Panel and Main Door Assemblies F23
- F. Pulleys F25
- G Tumbler (Basket) Alignment F28
- H. Bearings F29
- I. Basket and Support F32
- J. V-Belts F32
- K. Motors F34
- L. Impellor F35
- M. Lint Drawer Assembly F35

SECTION VI

TROUBLESHOOTING F37

SECTION VII

ELECTRICAL TROUBLESHOOTING F41

SECTION VIII

PHASE 6 OPL SYSTEM DIAGNOSTICS F42

- A. Diagnostic (L.E.D. [light emitting diode] Display) Failure Codes F42
- B. L.E.D. (light emitting diode) Display Indicators F44
- C. Phase 6 OPL Microprocessor Controller Relay Output L.E.D. (light emitting diode) Indicators . F45

SECTION IX

L.E.D. DISPLAY/CODES F46

- A. L.E.D. (light emitting diode) Display Operating Status F46
- B. Phase 6 OPL Microprocessor L.E.D. (light emitting diode) Displays F47
- C. L.E.D. Codes F48
- D. Computer Logic and Wiring Diagram F49

SECTION X

TECHNICAL INFORMATION F55

- A. Motor Plate (High and Low Voltage) F55
- B. Data Label F56
- C. Using a Manometer F57
- D. Tool List FAA58

SECTION I

IMPORTANT INFORMATION

A. SAFETY PRECAUTIONS

1. **DO NOT** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

2. Purchaser/user should consult the local gas supplier for proper instructions to be followed in the event the user smells gas. The instructions **should be** posted in a prominent location.

3. Dryer **must be** exhausted to the outdoors.

4. Although **ADC's** dryer is a very versatile machine, there are some articles, that due to fabric composition or cleaning method, **should not be** dried in it.

WARNING: Dry only water-washed fabrics. ***DO NOT*** dry articles spotted or washed in dry cleaning solvents, a combustible detergent, or "all purpose" cleaners. **FIRE or EXPLOSION COULD RESULT.**

WARNING: ***DO NOT*** dry rags or articles coated with gasoline, kerosene, paint, or wax.

WARNING: ***DO NOT*** dry mop heads. Contamination by wax or flammable solvents will create a fire hazard.

WARNING: ***DO NOT*** use heat for drying articles that contain plastic, foam, sponge rubber, or similarly textured rubberlike materials. Drying in a heated tumbler (basket) may damage plastic or rubber and also may be a fire hazard.

5. A program **should be** established for the inspection and cleaning of lint in the burner area and exhaust duct work. The frequency of cleaning can best be determined from experience at each location.

WARNING: The collection of lint in the burner area and exhaust duct work can create a potential fire hazard.

6. For personal safety, the dryer **must be** electrically grounded in accordance with local codes and/or the National Electrical Code ANSI/NFPA No. 70-LATEST EDITION.

NOTE: Failure to do so will VOID THE WARRANTY.

7. **UNDER NO CIRCUMSTANCES** should the dryer door or lint drawer switch(es) or heat safety devices ever be disabled.

WARNING: PERSONAL INJURY or FIRE COULD RESULT.

8. Articles **should never be** left unattended for an extended period of time in the tumbler (basket) after completion of the drying and cooling cycles.

WARNING: ARTICLES LEFT IN THE DRYER AFTER THE DRYING and COOLING CYCLES HAVE BEEN COMPLETED CAN CREATE A FIRE HAZARD.

9. This dryer is not to be used in the presence of dry cleaning solvents or fumes.

10. Read and follow **ALL** caution and direction labels attached to the dryer.

WARNING: CHILDREN ***SHOULD NOT BE*** ALLOWED TO PLAY ON or IN THE DRYER(S). CHILDREN ***SHOULD BE*** SUPERVISED IF NEAR DRYER(S) IN OPERATION.

11. **DO NOT** operate dryers with more than 125 PSI steam pressure. Excessive steam pressure can damage steam coil and/or harm personnel.

12. Replace leaking flexible steam hoses or other steam fixtures immediately. **DO NOT** operate dryer with leaking flexible hoses. Personal injury may result.

SECTION II

ROUTINE MAINTENANCE

A. CLEANING

A program and/or schedule **should be** established for periodic inspection, cleaning, and removal of lint from various areas of the dryer, as well as throughout the duct work system. The frequency of cleaning can best be determined from experience at each location. Maximum operating efficiency is dependent upon proper air circulation. The accumulation of lint can restrict this airflow. If the guidelines in this section are met, an **ADC** dryer will provide many years of efficient, trouble free, and – most importantly – safe operation.

WARNING: LINT FROM MOST FABRICS IS HIGHLY COMBUSTIBLE. THE ACCUMULATION OF LINT CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: KEEP DRYER AREA CLEAR and FREE FROM COMBUSTIBLE MATERIALS, GASOLINE, and OTHER FLAMMABLE VAPORS and LIQUIDS.

NOTE: Suggested time intervals shown for average usage which is considered six (6) to eight (8) operational (running) hours per day.

Clean lint drawer/screen every third or fourth load.

NOTE: Frequency can best be determined at each location.

DAILY
(beginning) of each work shift.

Clean lint from the drawer/screen. Inspect lint screen and replace if torn.

WEEKLY

Clean lint accumulation from lint chamber, thermostat, and microprocessor temperature sensor (sensor bracket) area.

WARNING: To avoid the hazard of electrical shock, discontinue electrical supply to dryer.

STEAM DRYERS

Clean steam coil fins using compressed air and a vacuum cleaner with brush attachment.

NOTE: When cleaning steam coil fins, be careful not to bend the fins. If fins are bent, straighten by using a fin comb which is available from local air conditioning supply houses.

90 DAYS

Remove lint from tumbler (basket), drive motors, and surrounding areas. Remove lint from gas valve burner area with a dusting brush or vacuum cleaner attachment.

NOTE: To prevent damage, avoid cleaning and/or touching ignitor/flame-probe assembly.

Remove lint accumulation from inside control box and at rear area behind control box.

6 MONTHS

Inspect and remove lint accumulation in customer furnished exhaust duct work system and from dryer's internal exhaust ducting.

WARNING: THE ACCUMULATION OF LINT IN THE EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

WARNING: *DO NOT* OBSTRUCT THE FLOW OF COMBUSTION and VENTILATION AIR. CHECK CUSTOMER FURNISHED BACK DRAFT DAMPER IN EXHAUST DUCT WORK. INSPECT and REMOVE ANY LINT ACCUMULATION WHICH CAN CAUSE DAMPER TO BIND or STICK.

NOTE: A back draft damper that is sticking partially closed can result in slow drying and shut down of the heat circuit safety switches or thermostats.

NOTE: When cleaning dryer cabinet(s), avoid using harsh abrasives. A product intended for the cleaning of appliances is recommended.

B. ADJUSTMENTS

7 DAYS AFTER INSTALLATION and EVERY 6 MONTHS

Inspect bolts, nuts, screws, (bearing set screws), nonpermanent gas connections (unions, shut-off valves, orifices, and grounding connections). Motor and drive belts **should be** examined. Cracked or seriously frayed belts **should be** replaced. Tighten loose V-belts when necessary. Complete operational check of controls and valves. Complete operational check of **ALL** safety devices (door switch, lint drawer switch, sail switch, burner and hi-limit thermostats).

C. LUBRICATION

The motor bearings, idler bearings...and under normal/most conditions the tumbler bearings are permanently lubricated. It is physically possible to re-lubricate the tumbler bearings if you choose to do so even though this practice *is not necessary.* Use Shell Alvania #3 or its equivalent. The tumbler bearings used in the dryer **DO NOT HAVE** a great fitting. Provisions are made in the bearing housing for the addition of a grease fitting which can be obtained elsewhere, or from **ADC** by ordering kit Part No. 882159, which includes two (2) fittings.

SECTION III

INSTALLATION REQUIREMENTS

Installation **should be** performed by competent technicians in accordance with local and state codes. In the absence of these codes, installation **must conform** to applicable AMERICAN NATIONAL STANDARDS:

ANSI Z223.1-LATEST EDITION National Fuel Gas Code
and/or
ANSI/NFPA No. 70-LATEST EDITION National Electrical Code

A. ENCLOSURE, AIR SUPPLY, and EXHAUST REQUIREMENTS

NOTE: The following information is very brief and general. For detailed description, refer to the "ML-190 Installation Manual" (**ADC** P/N 113070).

Bulkheads and partitions around the dryer **should be** made of noncombustible materials. Allowances **should be** made for the opening and closing of the control door and lint drawer. Also, allowances **should be** made in the rear for ease of maintenance. (Refer to appropriate Installation Manual for recommended distances and minimum allowances required.)

When the dryer is operating, it draws in room air, heats it, passes this air through the tumbler (basket), and exhausts it out of the building. Therefore, the room air **must be** continually replenished from the outdoors. If the make-up air is inadequate, drying time and drying efficiency will be adversely affected. Ignition problems and sail switch "fluttering" problems on gas dryers may result, and you also could have premature motor failure from overheating. The air supply **must be** given careful consideration to insure proper performance of each dryer.

IMPORTANT: Make-up air ***must be*** provided from a source free of dry cleaning fumes. Make-up air that is contaminated by dry cleaning fumes will result in irreparable damage to motors and other dryer components.

Exhaust duct work **should be** designed and installed by a competent technician. Improperly sized duct work will create excessive back pressure which will result in slow drying, increased use of energy, and shut down of the burner by the airflow (sail) switch, burner hi-limit or lint chamber hi-heat protector thermostat. (Refer to appropriate Installation Manual for more details.)

CAUTION: IMPROPERLY SIZED or INSTALLED EXHAUST DUCT WORK CAN CREATE A POTENTIAL FIRE HAZARD.

B. ELECTRICAL and GAS REQUIREMENTS

It is your responsibility to have **ALL** electrical connections made by a properly licensed and competent electrician to assure that the electrical installation is adequate and conforms with local and state regulations or codes. In the absence of such codes, **ALL** electrical connections, material, and workmanship **must conform** to the applicable requirements of the National Electrical Code ANSI/NFPA No. 70-LATEST EDITION.

IMPORTANT: Failure to comply with these codes or ordinances and/or the requirements stipulated in this manual can result in personal injury or component failure.

The gas dryer installation **must meet** the AMERICAN NATIONAL STANDARD, NATIONAL FUEL GAS CODE ANSI Z223.1-LATEST EDITION, as well as, local codes and ordinances, and **must be** done by a qualified technician.

NOTE: Undersized gas piping will result in ignition problems and slow drying and can create a safety hazard.

The dryer **must be** connected to the type of gas (natural or L.P.) indicated on the dryer data label. If this information does not agree with the type of gas available, contact the distributor who sold the dryer or contact the factory.

The gas input ratings shown on the dryer data label are for elevations up to 2,000 feet, unless elevation requirements of over 2,000 feet were specified at the time the dryer order was placed with the factory. The adjustment for dryers in the field for elevations over 2,000 feet are made by changing the burner orifices. If this adjustment is necessary, contact the distributor who sold the dryer or contact the factory.

NOTE: Any burner changes ***must be*** made by a qualified technician.

C. OPERATIONAL SERVICE CHECK PROCEDURE

1. Turn on electric power to the dryer.

2. To start dryer:

   a. Display will read "READY."

   b. Press "E" on the keyboard (touchpad) of microprocessor controller (computer).

   c. The dryer will start, and the display will show "Drying Manual Cycle E," "Dry Temp _," "Cool Temp_," "30 Min Remain."

NOTE: Pressing keyboard (touchpad) "A," "B," "C," "D," and "F" will also start the dryer. Six (6) preprogrammed drying cycles ("A" through "F") have been stored in the computer's memory. (Refer to Computer Operator's Manual for details.)

3. Make a complete operational check of **ALL** the operating controls to assure that the timing is correct, temperature selection switches are functioning, etc.

4. Make a complete operational check of **ALL** safety-related circuits: door switch(es), hi-limit thermostat, sail switch, cycling thermostats, etc.

5. For gas dryers a gas pressure test **should be** taken at the gas valve pressure tap of each dryer to assure that the water column pressure is correct and consistent.

NOTE: Water column pressure requirements (measured at the pressure tap on the gas valve body):

Natural Gas - 3.5 Inches Water Column.
L.P. Gas - 10.5 Inches Water Column.

6. If computer program changes are required, refer to the Phase 6 OPL Operator's Manual (**ADC** Part No. 113022) for details.

7. The dryer **should be** operated through one complete cycle to assure that no further adjustments are necessary and that **ALL** components are functioning properly.

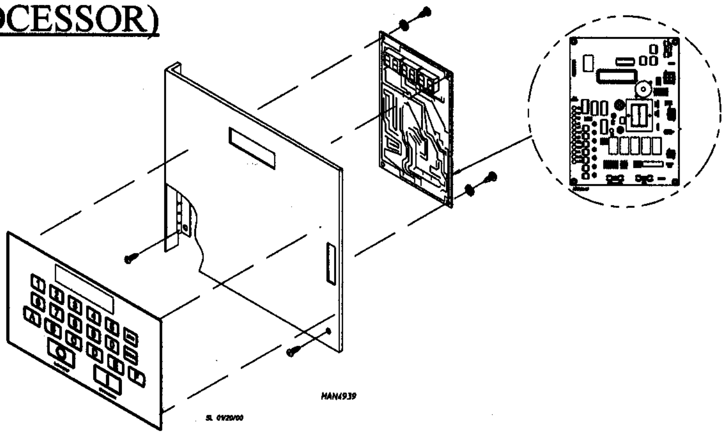
8. Check the electric service phase sequence. While the dryer is operating, check to see if the blower wheel is rotating in the proper direction. Looking from the front, the blower wheel should spin in the clockwise (CW) direction. If so, the phasing is correct. If the phasing is incorrect, reverse two (2) leads at connections L1, L2, or L3 of power supply to the dryer.

SECTION IV

DESCRIPTION OF PARTS

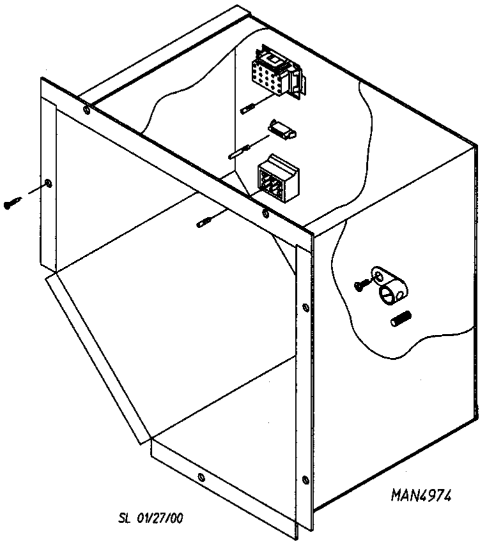
A. CONTROL PANEL (MICROPROCESSOR)

Lifting the control door will reveal the control panel assembly. Opening the control panel will allow access to the major components which include the computer board and keyboard (touchpad). The keyboard (touchpad) inputs to the computer what temperature and program has been selected. The computer controls the entire operation of the machine. It accepts inputs and gives outputs to various parts throughout the machine.



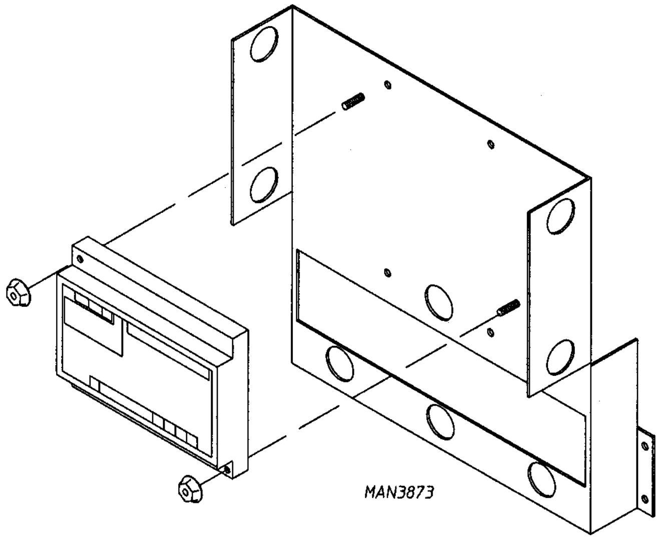
B. CONTROL BOX

Lifting the control door and opening the computer panel will reveal the control box. Inside the control box are **ALL** the electronic control components. Located on the back of the control box is the computer. Included in the control box are the 30-position terminal block, fuse block, and transformer.

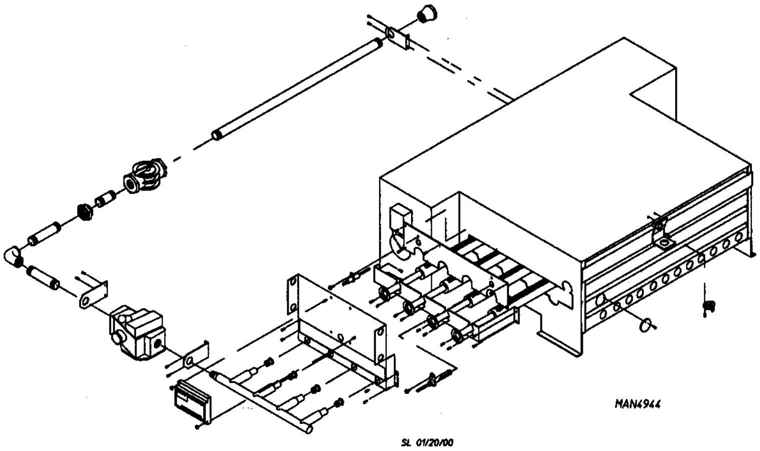


C. HSI MODULE (Gas Models ONLY)

The HSI (Hot Surface Ignition) system consists of a microprocessor-based control module, along with an ignitor and flame-probe assembly. This control utilizes a HSI (Hot Surface Ignition) ignitor and a rectified flame sensor/probe signal to locally control **ALL** basic functions in the gas burner.

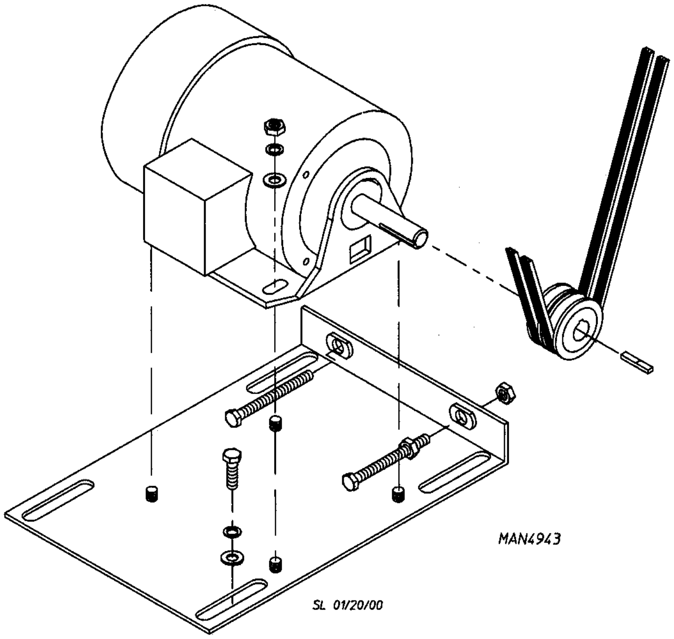


D. GAS BURNER ASSEMBLY



Gas-heated dryers are equipped with a gas burner assembly consisting of four (4) burner tubes, gas valve, HSI (Hot Surface Ignition) ignitor, flame probe, sail switch, and hi-limit thermostat. The inlet piping enters through the rear of the dryer on the left-hand side (viewing from the front) and runs to the front of the dryer where the gas valve is located.

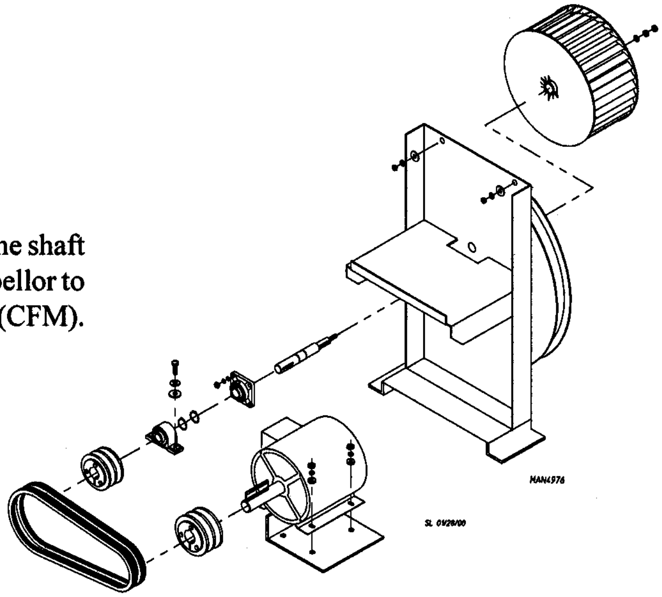
E. DRIVE MOTOR



The T.E.F.C. (Totally Enclosed, Fan-Cooled) drive motor is located approximately in the right front hand corner of the dryer. It sits on an adjustable base so that the motor can be easily adjusted to the left or right. The drive motor is a 3 HP motor and operates on 208 to 460 volts, 50/60 Hz, 3-phase (3ø).

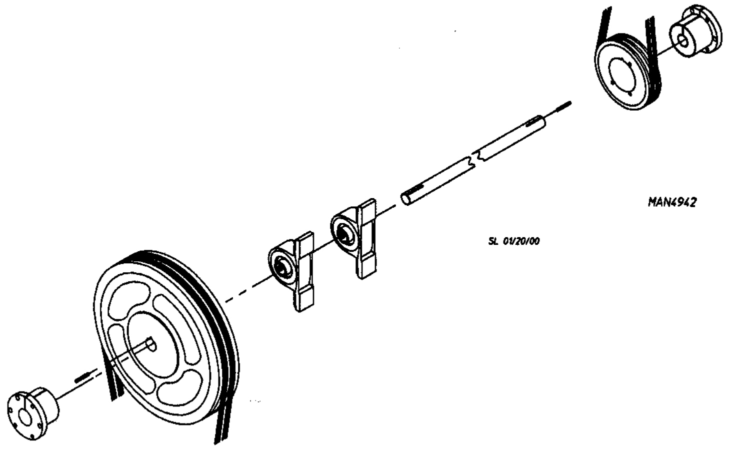
F. BLOWER MOTOR and IMPELLOR (GAS and STEAM)

The impellor is shaft driven. The blower motor drives the shaft on which the impellor is mounted. This enables the impellor to run at a higher RPM, thereby producing a higher airflow (CFM).



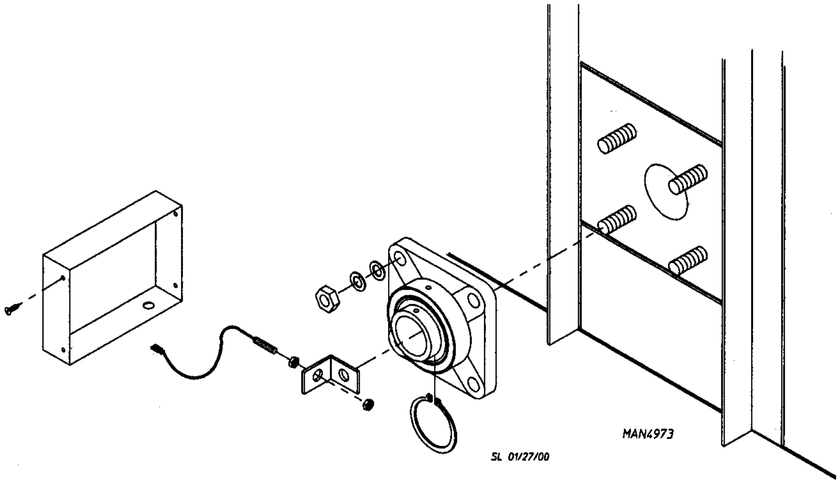
G. SPEED REDUCING SHAFT

(Viewing from the front of the dryer). The speed reducing shaft is located on the right side and is right above the drive motor. The idler assembly consists of two (2) idler pulleys, the small and large pulleys. The idler's main purpose is to reduce the speed and increase torque provided to the tumbler (basket) bearing. Also, at the idler assembly, belt tension can be adjusted.



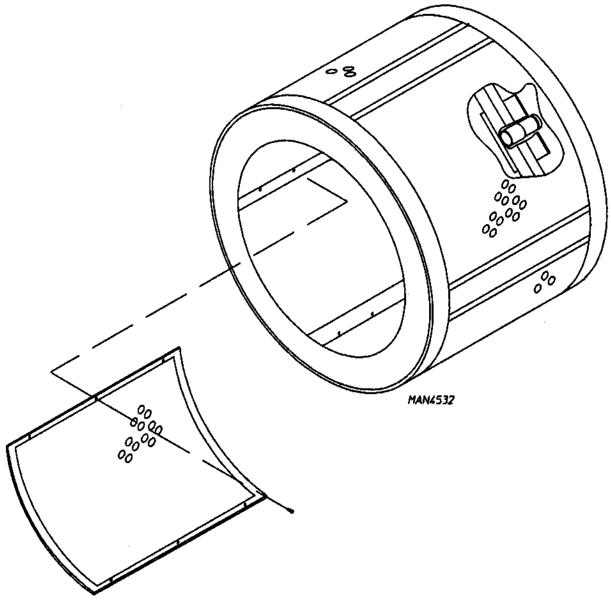
H. TUMBLER (BASKET) BEARING ARRANGEMENT

The tumbler (basket) bearing arrangement is located (viewing from the rear of the dryer) approximately at the upper center of the dryer. The arrangement consists of a bearing cap, rotational sensor and a flange bearing which serve to support the tumbler (basket).



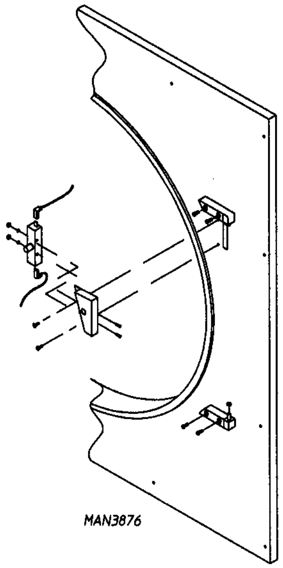
I. TUMBLER (BASKET)

The tumbler (basket) consists of four (4) ribs and four (4) perforated panels, along with a front and back, which are welded together as an assembly. The (tumbler [basket]) also consists of a trunnion, which supports the tumbler (basket) in the rear.



J. MAIN DOOR SWITCH

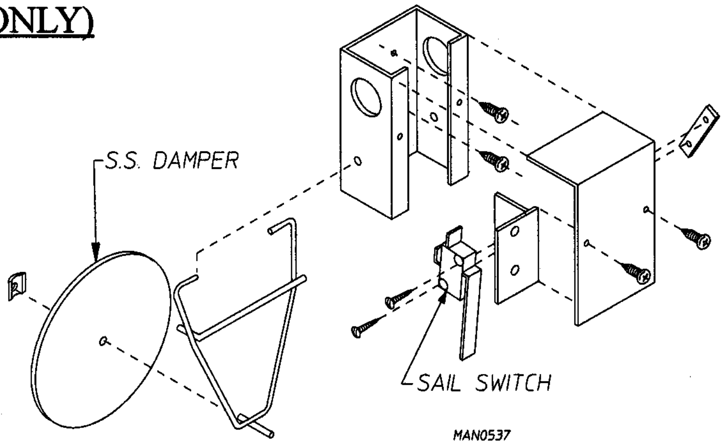
The main door switch is located near the main door hinge. When the main door opens, the switch will also open, preventing the dryer from operating. The main door switch is a safety device and **should never be** disabled.



CURRENT PRODUCTION

K. SAIL SWITCH (GAS MODELS ONLY)

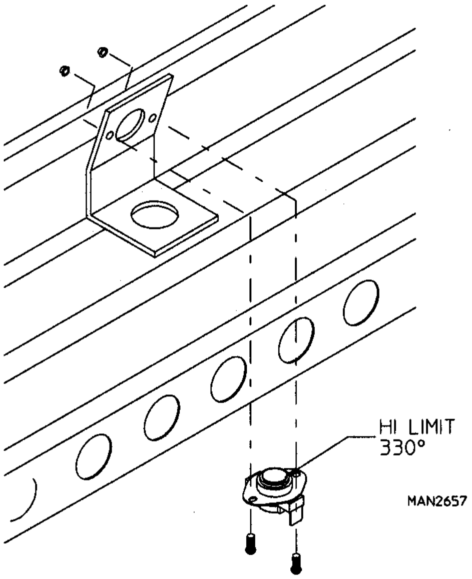
The sail switch is located on the front of the burner box. A sail switch consists of a round damper plate on a lever arm which is in contact with an electric switch. When the air blower comes on, it draws air through the gas burner. This creates a negative pressure inside the burner box, and this negative pressure pulls in the round damper and activates the sail switch. If there is improper airflow, the damper will not pull in, preventing the burner from starting.



Improper airflow can be caused by improperly designed exhaust ducting where the duct run is too long or has too many sharp bends in it. It can also be caused by a lack of make-up air.

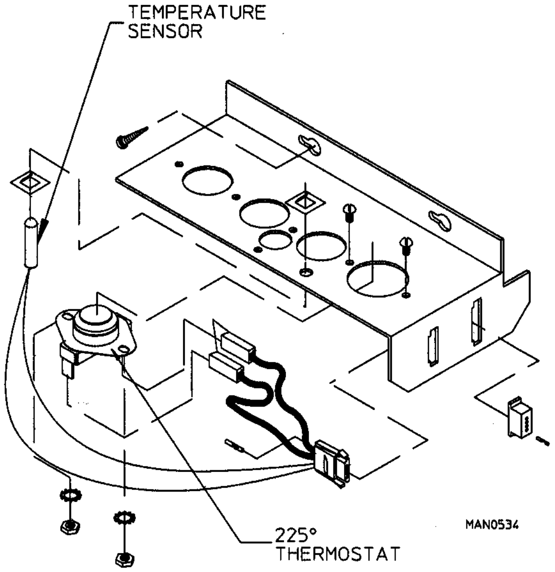
L. HI-LIMIT (GAS MODELS ONLY)

A hi-limit thermostat is located at the burner. This is a manual reset disc-type thermostat set at 330° F. If the flame in the burner should get too hot, this thermostat will shut off the burner. This is generally caused by low airflow through the dryer. The heat will not ignite/fire unless this manual reset thermostat is reset.



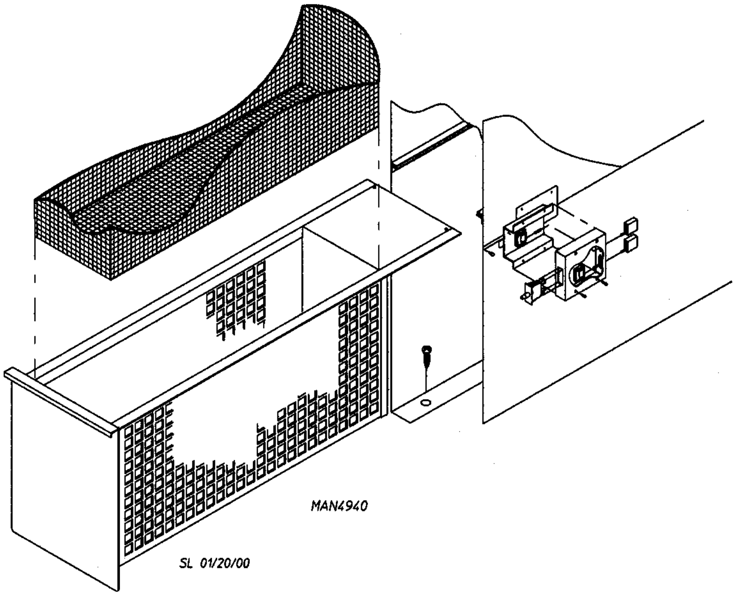
M. MANUAL RESET THERMOSTAT

This is located inside the dryer in the lint compartment above the lint drawer. This thermostat senses the heated air after it has passed through the tumbler (basket). If the air temperature gets too hot, the thermostat will shut off the burner. Tumbler (basket) and blower will run, but dryer will not heat until this thermostat is manually reset.



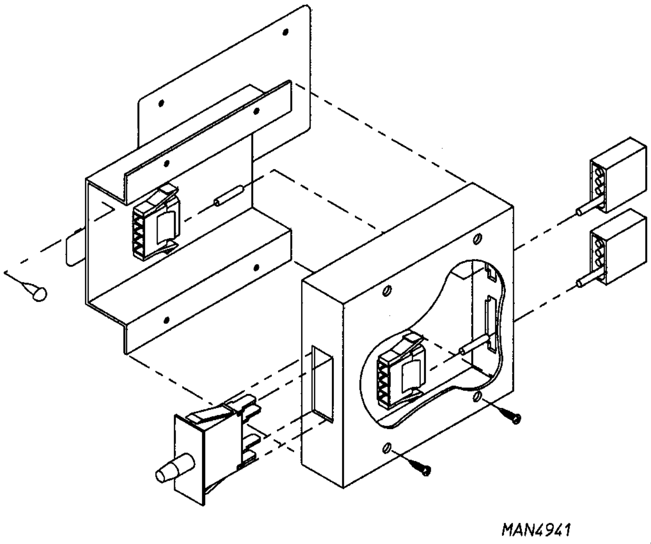
N. LINT DRAWER

The lint drawer is a pullout type and is located at the bottom of the dryer in the lint compartment. Simply grab the lint drawer handle, slide out the drawer, brush off the lint, and slide the drawer back in. The lint screen **must be** kept clean in order for the dryer to operate properly and efficiently.



O. LINT DRAWER SWITCH

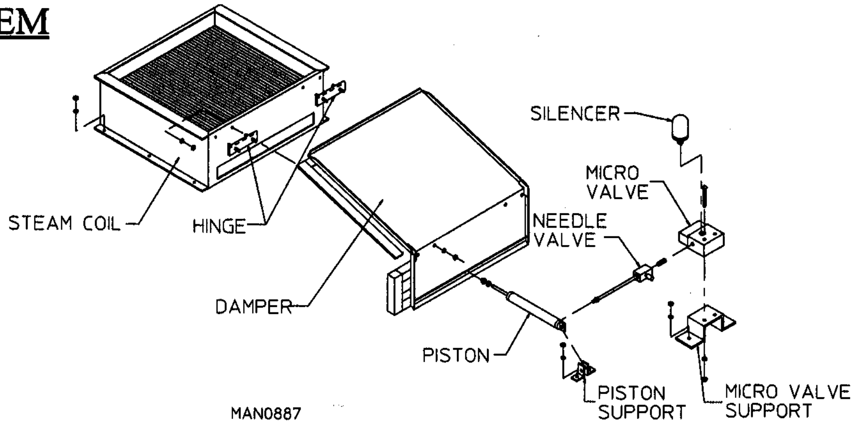
The lint drawer switch is located in the lint compartment and attached to the side of the lint drawer track. The lint drawer switch insures that the dryer will operate only when the lint drawer is completely closed. This is a safety device and **should never be** disabled.



SL 01/20/00

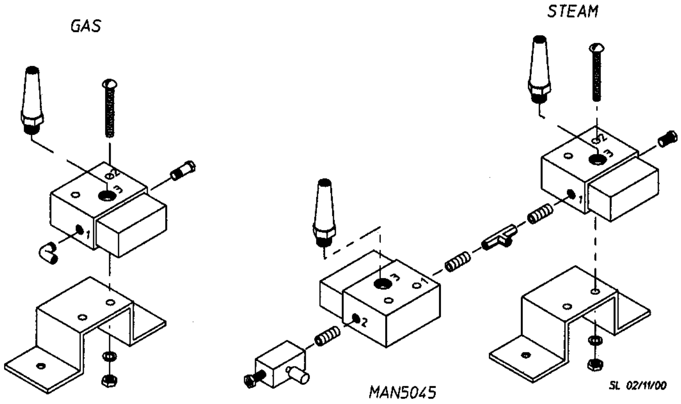
P. STEAM DAMPER SYSTEM

The newest type system is called the steam damper. It is shown to the right and it uses a piston with compressed air to open and close the steam damper which in turn allows the air to flow either through the coil for heat, or under the coil for cool down. Air supply is 80 PSI (+/- 10 PSI).


SILENCER
MICRO VALVE
NEEDLE VALVE
STEAM COIL
HINGE
DAMPER
PISTON
PISTON SUPPORT
MICRO VALVE SUPPORT
MAN0887

Q. COMPRESSED AIR REQUIREMENTS

The dryer requires an external supply of air (2.5 cfm @ 80 psi) on the steam models the air is necessary to operate the damper system. On both steam, as well as the gas model, the air is necessary/required for the blower air jet operation...to clean lint from the impellor/fan (squirrel cage type).


GAS
STEAM
MAN5045
SL 02/11/00

SECTION V

SERVICING

INTRODUCTION

ALL electrical/mechanical service or repairs **should be** made with the electrical power to the dryer disconnected (power off).

WARNING: PERSONAL INJURY COULD RESULT.

The information provided in this section **should not be** misconstrued as a device for use by an untrained person making repairs. Service work **should be** performed by competent technicians in accordance with local, state, and federal codes.

When contacting the factory for assistance, always have the dryer model and serial numbers available.

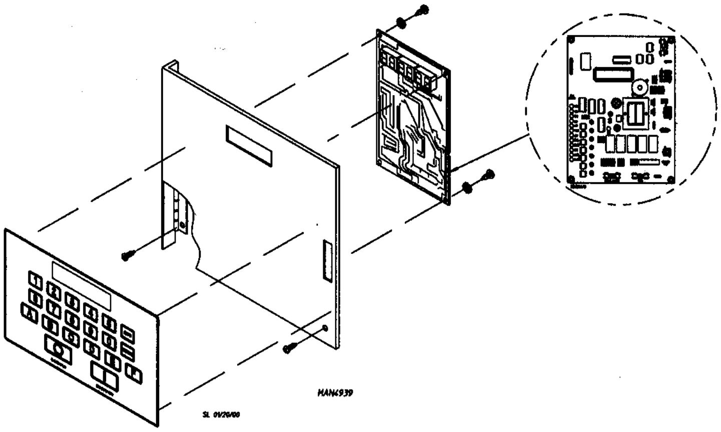
CAUTION: Observe **ALL** safety precautions displayed on the dryer or specified in this manual before and while making repairs.

Before considering replacement, make sure that **ALL** connectors are in place and making proper contact.

A. COMPUTER CONTROLS

To Replace Computer

1. Disconnect electrical power to the dryer.
2. Disconnect main power harness along with the three (3) other connectors located on the computer board, from rear of computer by squeezing locking tab and pulling connector straight back.
3. Disconnect the "green" ground wire and the air jet wire from the computer.
4. Disconnect keyboard (touchpad) ribbon from the computer.
5. Remove the two (2) securing the computer to the sheet metal control panel. Remove the board by pulling the other two (2) corners off the clinch studs.
6. Install new computer by reversing this procedure.



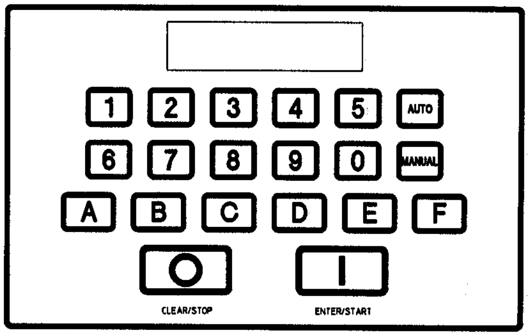
7. When replacing the computer, the "A" and "B" factors **must be** reprogrammed. (Refer to "Computer Operator's Manual" for details.)

> **NOTE:** The "A" and "B" factors are printed on a label located on the rear of the control panel (refer to illustration).

8. Reestablish electrical power to the dryer.

To Replace Keyboard (Touchpad) Label Assembly

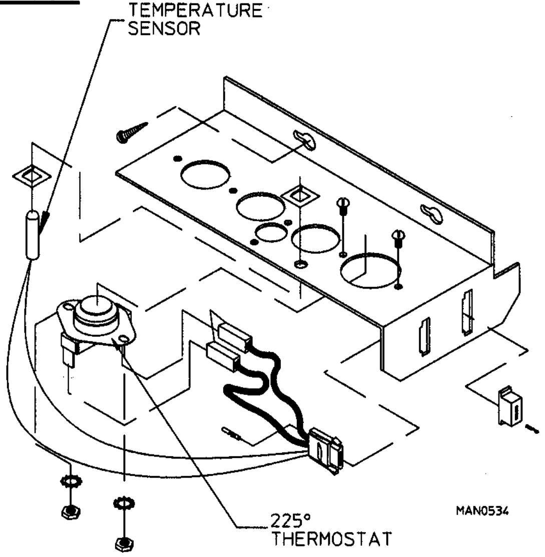
1. Discontinue electrical power to the dryer.
2. Unplug keyboard (touchpad) ribbon from rear of computer.
3. Slowly peel off and remove keyboard (touchpad) label assembly from control panel.
4. Peel paper backing off new keyboard (touchpad) label assembly.



MAN3453

5. Holding the new keyboard (touchpad) label assembly close to the panel, insert the keyboard (touchpad) ribbon through the rectangular slot in the control panel. Align label assembly into position by matching the red viewing window on the label to the rectangular cutout in the panel and gently press into place.
6. Connect keyboard (touchpad) ribbon to the computer.
7. Reestablish electrical power to the dryer.

To Replace Microprocessor Temperature Sensor Probe



1. Discontinue electrical power to the dryer.

2. Remove lint drawer. Remove six (6) screws securing lint door and remove lint door.

3. Remove microprocessor sensor bracket assembly from dryer.

    a. Disconnect sensor bracket harness connector.

    b. Loosen the two (2) Phillips head screws securing bracket assembly to dryer and remove bracket from dryer.

NOTE: ***DO NOT*** remove screws.

4. Disassemble sensor probe from bracket assembly by removing the top push-on fastener securing the probe from bracket. Use a small screwdriver to slowly pry the fastener off.

5. Disconnect the two (2) "orange" wires from the high heat (225° F) thermostat, and remove modular bracket connector, wires, and probe from bracket assembly.

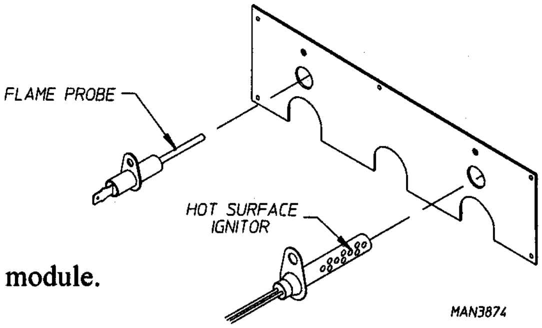
6. Install new sensor probe assembly (**ADC** P/N 880251) by reversing procedure.

7. Reestablish electrical power to the dryer.

NOTE: If, when power is reestablished, the computer display reads "Temp Sensor Check Temp Sensor Fuse," check for a loose connection in the wiring.

B. IGNITION CONTROLS

To Remove HSI (Hot Surface Ignition) Ignitor



1. Discontinue electrical power to the dryer.

2. Disconnect the two (2) "white" ignitor wires going to the HSI module.

3. Disassemble HSI ignitor from burner by removing the self tapping screw.

4. Reverse procedure for installing new ignitor.

C. TO REMOVE FLAME PROBE ASSEMBLY

1. Discontinue electrical power to the dryer.

2. Disconnect the "red" wire from the flame sensor probe which goes to S2 on the HSI module.

3. Disassemble flame sensor probe from burner by removing the self tapping screw.

4. Reverse procedure for installation of new flame sensor probe.

To Replace Gas Valve (Refer to burner illustration on **page 21**)

1. Discontinue electrical power to the dryer.
2. Close shut-off valve(s) in gas supply line.
3. Disconnect gas valve wiring.

NOTE: Identify location of each wire for correct reinstallation.

4. Break union connection before gas valve.
5. Loosen and remove screws (4) securing pipe brackets to burner.
6. Remove gas valve/manifold assembly from dryer.
7. Remove valve mounting bracket, manifold, and piping from gas valve.
8. Reverse procedure for installing new gas valve.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: NEVER TEST FOR LEAKS WITH A FLAME!!!

To Replace Main Burner Orifices

1. Refer to "To Replace Gas Valve" and follow ***Step #1 through Step #6***.
2. Unscrew main burner orifices and replace.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

3. Reversing the removal procedure for reinstalling.

NOTE: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: NEVER TEST FOR LEAKS WITH A FLAME!!!

To Test and Adjust Gas (Water Column) Pressure

There are two (2) types of devices commonly used to measure water column pressure. They are spring/mechanical-type gauges and manometers. The spring/mechanical-type gauge is not recommended, because it is easily damaged and not always accurate. A manometer is simply a glass or transparent plastic tube with a scale in inches. When filled with water and pressure applied, the water in the tube rises showing the exact water column pressure.

NOTE: Manometers are available from the factory by ordering **ADC** P/N 122804.

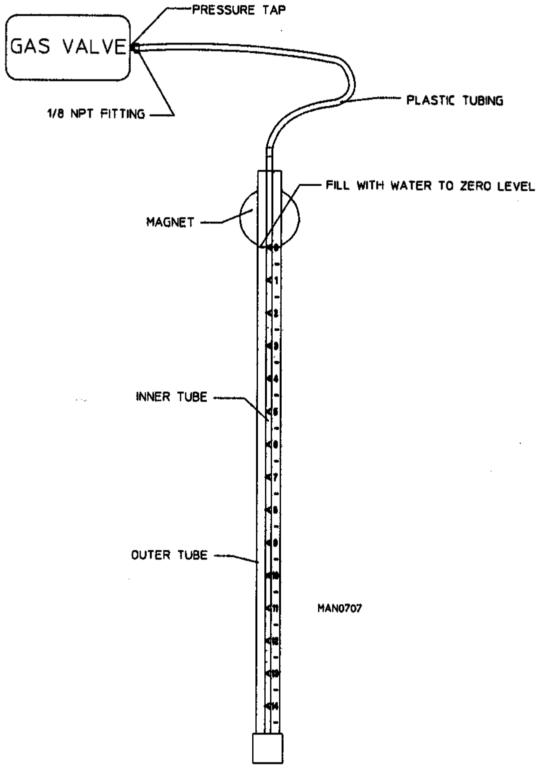
1. To Test Gas Water Column (W.C.) Pressure:

   a. Connect water column test gauge connection to gas valve pressure tap (1/8" NPT). This pressure tap is located on the outlet (manifold) side of the valve.

   b. Start dryer. With burner on, the correct water column reading in inches would be:

      Natural Gas – 3.5 Inches Water Column

      L.P. Gas – 10.5 Inches Water Column



2. To Adjust Water Column Pressure (natural gas only, L.P. gas **must be** regulated at source):

   a. Remove the slotted vent cap on the top of the valve.

   b. Turn the slotted adjustment screw located on the top of the valve next to the terminals. Turn clockwise (CW) to increase manifold pressure and counterclockwise (CCW) to decrease.

NOTE: If correct W.C. pressure **cannot** be achieved, problem may be due to an undersized gas supply line, a faulty or underrated gas meter, etc.

To Convert from Natural Gas to L.P. Gas

NOTE: **ALL** dryers are sold as natural gas, unless otherwise specified at the time the dryer order was placed. For L.P. gas the dryer ***must be*** converted as follows.

1. Refer to "Replace Gas Valve" and follow ***Step #1 through Step #6***.

2. Remove the four (4) screws which secure the top cap assembly. This assembly contains the regulator adjustment screw and the terminal connections.

3. Replace the top cap assembly with the L.P. version.

4. Unscrew main burner orifices and replace with L.P. orifices.

NOTE: Use extreme care when removing and replacing orifices. These orifices are made of brass and are easily damaged.

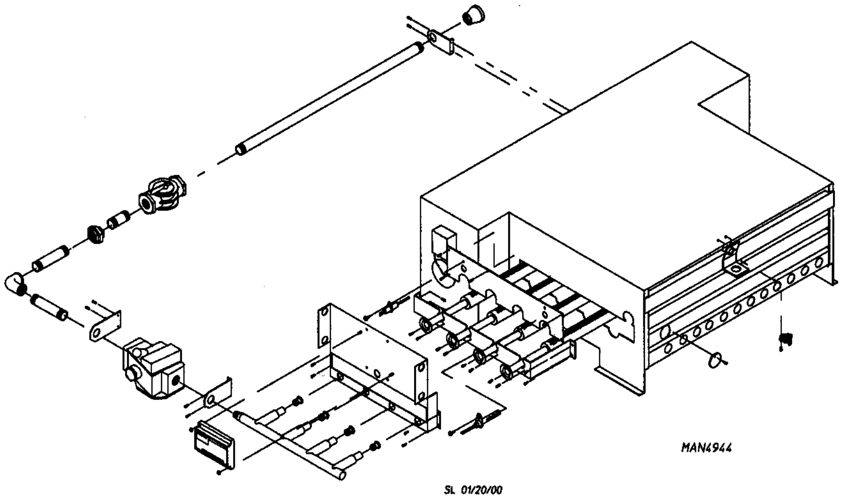
5. Reverse the procedure for reinstalling valve assembly to the dryer.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: NEVER TEST FOR LEAKS WITH A FLAME!!!

NOTE: There is no regulator provided in an L.P. dryer. The column pressure ***must be*** regulated at the source (L.P. tank) or an external regulator ***must be*** added to each dryer.

To Replace Burner Tubes

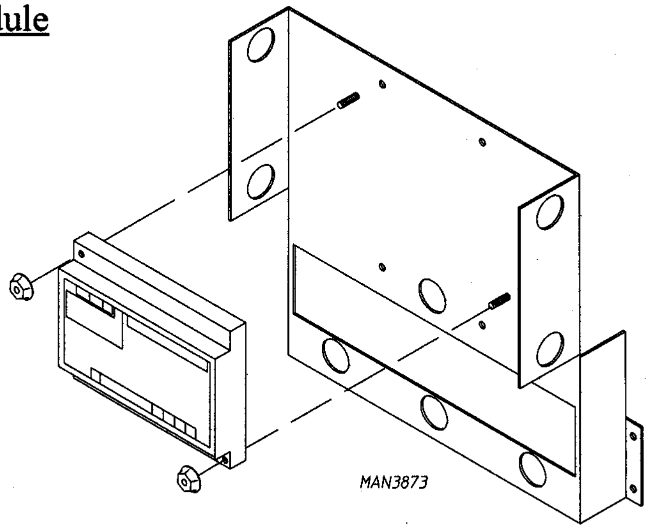


1. Refer to "Replace Gas Valve" and follow ***Step #1 through Step #6***.
2. Remove four (4) screws securing manifold rest and remove rest.
3. Remove the screws securing the front flanges of the burner tubes to the burner tube rest.
4. Remove the screws securing the burner tube rest to the oven and remove this rest.
5. Remove screws securing the burner box cover plate to the oven and remove this plate.
6. Remove burner tubes by sliding them out.
7. Replace by reversing procedure.

WARNING: Test **ALL** connections for leaks by brushing on a soapy water solution.

WARNING: **NEVER TEST FOR LEAKS WITH A FLAME**!!!

To Replace HSI (Hot Surface Ignition) Module



1. Discontinue electrical power to the dryer.
2. Remove the wires connected to the terminal strip at the bottom of the module.
3. Remove the two (2) pal nuts securing the module to the mounting bracket.
4. Replace module by reversing procedure.
5. Reestablish electrical power to the dryer.

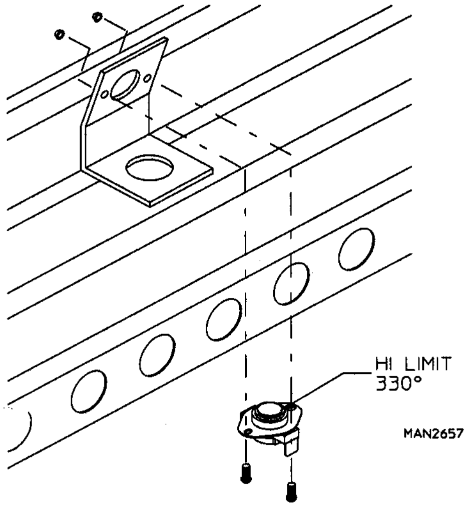
C. THERMOSTATS

To Replace Burner Hi-Limit Thermostat (Gas Models Only)

This thermostat is an important safety device serving as an added protection against failure of the airflow (sail switch) to open in the event of motor failure or reduced airflow condition.

IMPORTANT: UNDER NO CIRCUMSTANCES should heat circuit safety devices ever be disabled.

1. Discontinue electrical power to the dryer.
2. Disconnect wires from hi-limit thermostat.
3. Remove screw, washer, and nut securing thermostat to the bracket. Remove thermostat.
4. Reverse procedure for installing new thermostat.
5. Reestablish electrical power to the dryer.



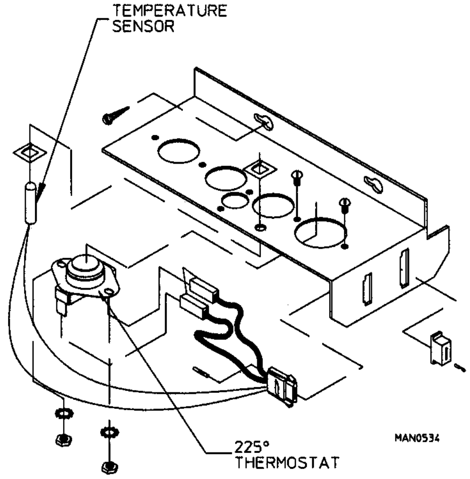
To Replace Lint Compartment Hi-Heat Protector (225° F) Thermostat

This thermostat is part of the "sensor bracket assembly" and is secured to the underside of the tumbler (basket) wrapper in the lint compartment. As a safety device, this thermostat will open (shut off) the heating unit circuit if an excessive temperature occurs. The dryer motors will remain on, even if the thermostat is open.

IMPORTANT: UNDER NO CIRCUMSTANCES should heat safety devices be disabled.

1. Discontinue electrical power to the dryer.
2. Remove lint drawer. Remove two (2) screws securing lint door and remove lint door.
3. Locate sensor bracket assembly and loosen the two (2) Phillips head screws securing bracket assembly to the tumbler (basket) wrapper.

NOTE: ***DO NOT*** remove the screws.



4. Remove bracket assembly by slightly sliding bracket towards the rear of the dryer and to the left.
5. Disconnect sensor bracket harness connector and remove bracket assembly from dryer.
6. Disconnect the two (2) "orange" wires from the thermostat.
7. Disassemble thermostat from bracket assembly by removing the two (2) mounting screws, washers, and nuts.
8. Reverse this procedure for installing a hi-heat protector thermostat.
9. Reestablish electrical power to the dryer.

NOTE: This is a manual reset thermostat. Before changing the thermostat make sure the reset button is in to determine if the thermostat has failed.

D. SAIL SWITCH ASSEMBLY (GAS MODELS ONLY)

The sail switch is a heat circuit safety device which controls the burner circuit only. When the dryer is operating and there is proper airflow, the sail switch damper pulls in and closes the sail switch. Providing **ALL** the other heat-related circuits are functioning properly, ignition **should now be** established. If an improper airflow occurs, the sail switch damper will release, and the circuit will open.

To Replace Sail Switch

1. Disconnect electrical power to the dryer.
2. Remove the two (2) screws which hold sail switch box cover to sail switch box.
3. Disconnect the two (2) wires from the switch.
4. Disassemble sail switch from mounting bracket by removing the two (2) screws securing switch in place.
5. Reverse this procedure for installing new sail switch. Adjust sail switch as described in the next section.

To Adjust Sail Switch

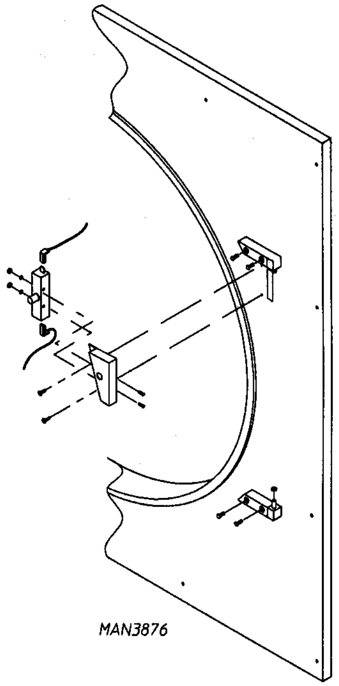
With the dryer operating at a high temperature setting, pull the sail switch away from the burner. The sail switch should open and extinguish the burner. Let the sail switch damper return to the burner wall. The sail switch should close to restart the burner ignition cycle. If the sail switch circuit does not operate as described, bend the actuator arm of the sail switch accordingly until proper operation is achieved. To check proper "open" position of sail switch, open main door, manually depress main door switch, and start dryer. With the main door open and the dryer operating, the sail switch **should be** open, and the burner should not come on.

CAUTION: ***DO NOT*** abort this switch by taping or screwing sail switch damper to burner.
PERSONAL INJURY or FIRE COULD RESULT.

E. FRONT PANEL and MAIN DOOR ASSEMBLIES

To Replace Main Door Switch

1. Discontinue electrical power to the dryer.
2. Open main door.
3. Remove the two (2) Phillips head screws holding the main door switch bracket assembly in place.
4. Remove door switch bracket and disconnect wiring from switch.
5. Disassemble door switch from bracket by removing the two (2) #6-32 nuts. Remove door switch from bracket.
6. Reverse this procedure for installing new door switch.

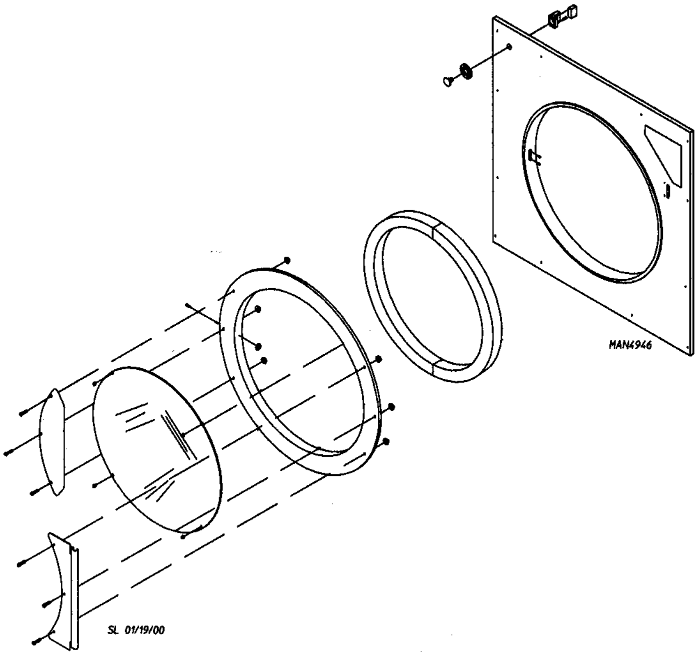


CURRENT PRODUCTION

7. Reestablish electrical power to the dryer.

IMPORTANT: **UNDER NO CIRCUMSTANCES** should the door switch be disabled.

To Replace Main Door Assembly



1. Remove two (2) Allen head screws holding the top main door hinge block to the front panel.
2. Reverse this procedure for reinstalling new main door assembly.

To Install New Main Door Glass

1. Remove main door assembly from dryer (follow main door removal procedure).
2. Lay main door on flat surface with front of door face up.
3. Remove the four (4) #10-32 Acorn nuts.
4. Remove glass and clean **ALL** old sealant off main door. This area **must be** completely cleaned for correct bonding.
5. Apply a narrow bead of silicone (**ADC** P/N 170730) **ALL** around main door area where glass will rest.
6. Install glass onto door/adhesive and slightly press glass in place.

IMPORTANT: ***DO NOT*** press hard or silicone thickness between the glass and door will be reduced, resulting in poor bonding.

7. Secure the four (4) #10-32 Acorn nuts to hold the glass.
8. The door assembly **should now be** put in an area where it will not be disturbed for at least 24 hours. Depending on the conditions, the curing time of this adhesive is 24 to 36 hours.
9. After 24-hour curing period, install main door on dryer by reversing step 1.

To Replace Front Panel

1. Discontinue electrical power to the dryer.
2. Remove main door switch and bracket assembly.
3. Follow procedure for removal of main door assembly.
4. Open control (service) door.
5. Remove lint drawer and open lint door by removing six (6) screws.

6. Unplug the door switch wires at the bottom of the front panel.

7. Disconnect the wires connecting the "EMERGENCY STOP" (E-Stop). The easiest place to do this would be in the left hand electrical box. Once the wires are disconnected, push them through the inner top.

8. Remove the twelve (12) Phillips head screws securing front panel to dryer.

9. Pull wires up through front panel door switch wire channel and gently remove front panel assembly.

10. Reverse this procedure for installing new front panel.

11. Reestablish electrical power to the dryer.

To Replace Main Door Hinge Blocks

1. Discontinue electrical power to the dryer.

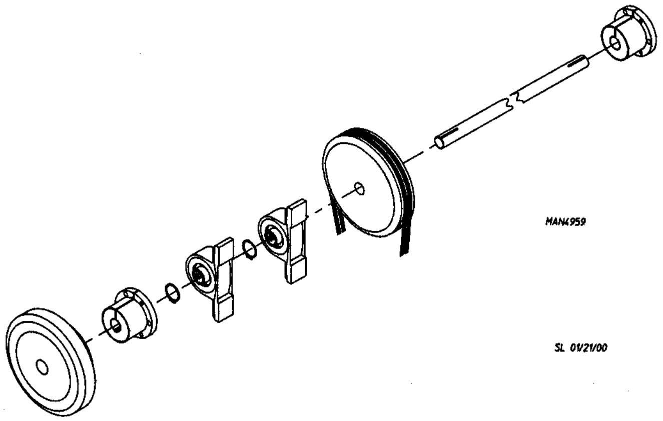
2. Follow procedure for removal of main door assembly.

3. Remove bottom hinge block by removing the two (2) 1/4-20 screws.

4. Reassemble by reversing removal procedure.

5. Reestablish electrical power to the dryer.

F. PULLEYS



To Replace Drive Shaft Pulley

1. Discontinue electrical power to the dryer.

2. Remove the lint drawer.

3. Remove the lint door.

4. Remove right lint coop wall.

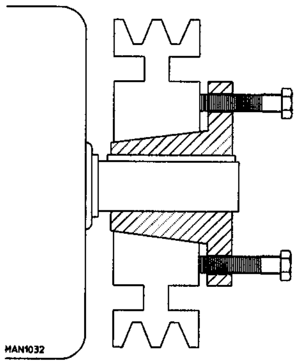
5. Loosen V-belts, then rotate pulley and roll V-belts out of its' grooves.

6. Remove cap screws from the bushings.

7. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A."

8. Remove bushing, pulley, and key.

A



9. Assemble bushing and sheave as shown in figure "B" on page 26. When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.

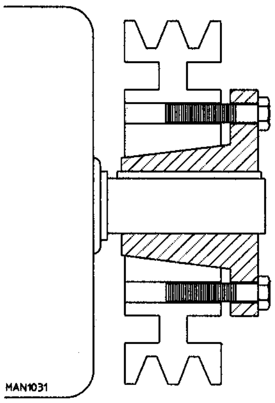
10. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.

11. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 30 ft.-lbs. If greater tightening forces are applied, excess pressures will be created in the hub of the mounted sheave which may cause it to crack.

To Replace Small Speed Reducing Pulley Shaft

B

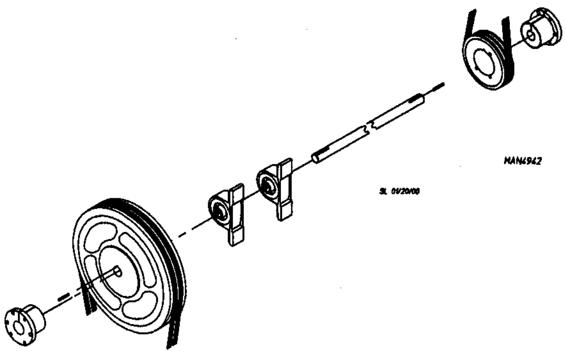


1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove right lint coop wall.
5. Loosen V-belts, then rotate pulley and roll V-belts out of its' grooves.
6. Remove cap screws from the bushings.
7. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on **page 25**.
8. Remove bushing, pulley, and key.
9. Assemble bushing and sheave as shown in figure "B." When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
10. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
11. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 6 ft.-lbs., if greater tightening forces are applied, excess pressures will be created in the hub of the mounted sheave which may cause it to crack.

To Replace Large Speed Reducing Pulley

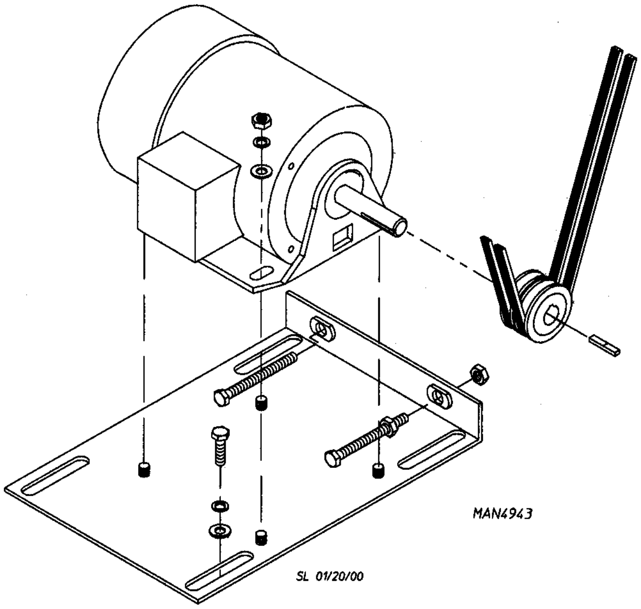
1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove right hand lint coop wall.



5. Loosen V-belts, then rotate pulley and roll V-belts out of its' grooves.
6. Remove cap screws.
7. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on **page 25**.
8. Remove bushing, pulley, and key.
9. Assemble bushing and sheave as shown in figure "B" on previous page. When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
10. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
11. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 15 ft.-lbs. If greater tightening forces are applied, excess pressures will be created in the hub of the mounted sheave which may cause it to crack.

To Replace Motor Pulley

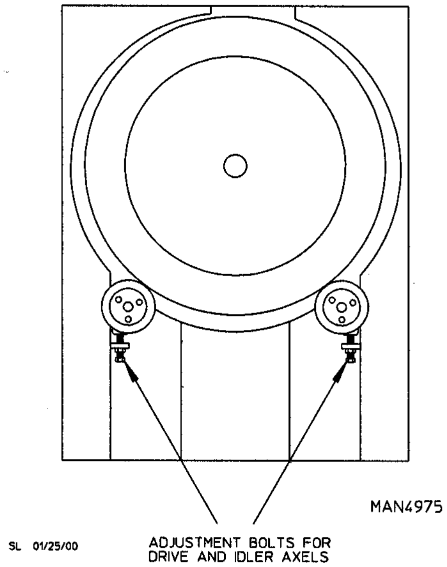


1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen V-belts, then rotate pulley and roll V-belts out of its' grooves.
5. Remove cap screws from bushing.
6. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft. Refer to figure "A" on **page 25**.
7. Remove bushing, pulley, and key.
8. Assemble bushing and sheave as shown in figure "B" on previous page. When cap screws are loosely inserted, bushing remains fully expanded to provide a sliding fit on the shaft.
9. Insert key on the shaft, then slide sheave to desired position with cap screw heads to the outside.
10. Tighten cap screws progressively. There should remain a gap between the sheave hub and the flange of the bushing.

IMPORTANT: Tighten screws evenly and progressively. Never allow the sheave to be drawn in contact with the flange of the bushing. This gap should measure from 1/8" to 1/4". Proper cap screw torque is 6 ft.-lbs., if greater tightening forces are applied, excess pressures will be created in the hub of the mounted sheave which may cause it to crack.

G. TUMBLER (BASKET) ALIGNMENT

ML-190 BASKET ADJUSTMENT / ALIGNMENT



1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove both the left hand and right hand lint coop walls.
5. Loosen the V-belts on drive shaft, then rotate pulley and roll V-belts out of its' grooves.
6. Tighten the two (2) bolts under the drive shaft clockwise (CW) to raise the tumbler (basket) and counterclockwise (CCW) to lower the tumbler (basket). The bolts **should be** tightened in even increments in order to ensure that the shaft runs parallel with the base of the dryer.

IMPORTANT: Side to side adjustment of the tumbler (basket) ***should be*** equal on either side of the front panel, but vertically the top of the tumbler (basket) should have a larger gap than the bottom to compensate for the load.

IMPORTANT: Be sure to tighten the left idler side to the same height as the right side/drive side. This length can be determined by taking measurements from the bottom of each pillow block bearing to the top of the bearing pad.

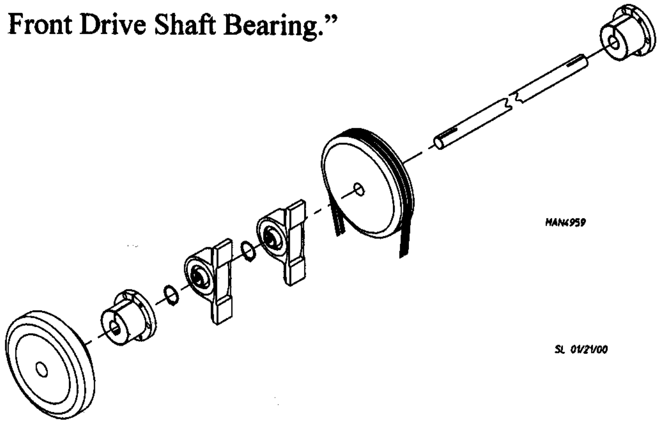
NOTE: If the axle height is not the same on the drive and idler side, then the tumbler (basket) will be either more to the right or left side, depending on which axle is higher.

7. Tighten locking nuts on the adjustment bolts.
8. Reverse ***Step #1 through Step #5*** for reassembly.
9. Check tumbler (basket) drive belt for proper tension. Adjust if necessary.
10. Reestablish electrical power to the dryer.

H. BEARINGS

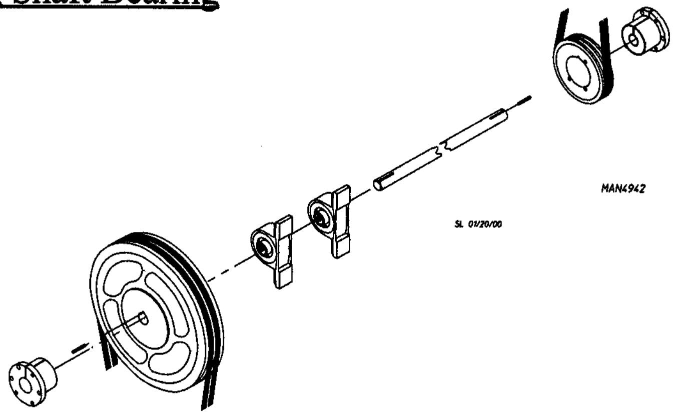
To Replace Rear Drive Shaft Pillow Block Bearing

1. Follow ***Step #1 through Step #6*** from "To Replace Front Drive Shaft Bearing."
2. Remove drive pulley.
    a. Remove cap screws from bushing.
    b. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft.
    c. Remove set screws from bushing.
    d. Remove bushing, pulley, and key.
3. Reverse these steps for the installation of new bearing.



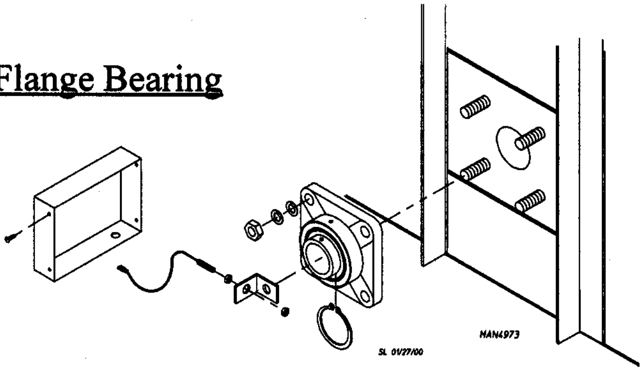
To Replace Front/Rear Speed Reducing Shaft Bearing

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen and roll V-Belts off that connect speed reducing shaft to drive shaft.
5. Loosen and roll V-belts off that connect speed reducing shaft to the drive motor.
6. Remove retaining ring that is located closest to the front/rear bearing.
7. Remove the four (4) bolts holding the two (2) speed reducing shaft pillow block assembly in the dryer.
8. Loosen and remove the two (2) set screws in the front/rear pillow block bearing.
9. Remove front/rear pulley.
    a. Remove cap screws from bushing.
    b. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft.
    c. Remove set screws from bushing.
    d. Remove bushing, pulley, and key.
10. Install new bearing by reversing these procedures.



11. Reestablish electrical power to the dryer.

To Replace Rear Tumbler (Basket) Support Flange Bearing

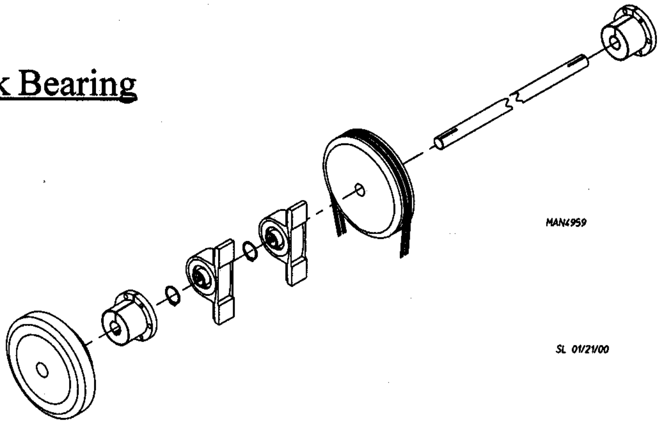


1. Discontinue electrical power to the dryer.
2. Remove bearing back guard.
3. Block rear of tumbler (basket) up to take weight off of shaft and bearing.

NOTE: This may be accomplished the easiest through the lint coop.

4. Remove the four (4) nuts securing the flange bearing.
5. Loosen the two (2) set screws from rear pillow block bearing collar.
6. Using two (2) flat head screw drivers, place one (1) between the casting of the bearing and the back of the dryer on both the top and bottom of the bearing. Try on the bearing until there is a large enough gap to fit the arms of a bearing puller.
7. Using a bearing pulley remove the flange bearing.
8. Replace by reversing ***Step #3 through Step #6***.
9. Adjust both lateral and vertical tumbler (basket) alignment. Check both the vertical and lateral adjustment of the tumbler (basket).
10. Reestablish electrical power to the dryer.

To Replace Front Drive Shaft Pillow Block Bearing



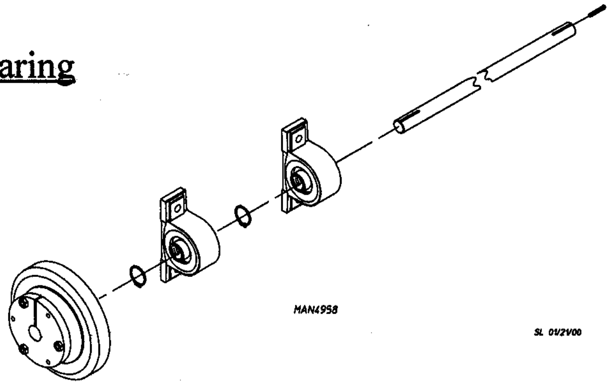
1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen and roll V-belts off that connect speed reducing shaft to drive shaft.
5. Remove the two (2) retaining rings from the tumbler (basket) drive shaft.
6. Remove the four (4) bolts holding the drive shaft assembly in the dryer.
7. Remove drive wheel.
   a. Remove cap screws from bushing.
   b. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft.
   c. Remove bushing, pulley, and key.

NOTE: Check belt adjustment and readjust if necessary.

8. Remove wheel from shaft.
9. Loosen the two (2) set screws in the race of the pillow block bearing.
10. Clean the shaft from the end up to the pillow block bearing and slide the pillow block bearing off of the shaft.
11. Reverse these steps to install new pillow block bearing.

To Replace Front Idler Shaft Pillow Block Bearing

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Block tumbler (basket) up.



5. Loosen adjustment bolt(s) and lock nuts securing the pillow block bearing up.
6. Remove bolts holding each idler pillow block bearing to mount.
7. Remove idler shaft (with both bearings and wheel still attached) from dryer.
8. Remove the retaining ring closest to the front bearing.
9. Remove drive wheel.
    a. Remove cap screws from bushing.
    b. Insert cap screws in tapped removal holes and tighten evenly until bushing becomes loose on shaft.
    c. Remove bushing, pulley, and key.
10. Slide bearing off the shaft.
11. Replace bearing by reversing procedure.
12. Reestablish electrical power to the dryer.

To Replace Rear Idler Shaft Pillow Block Bearing

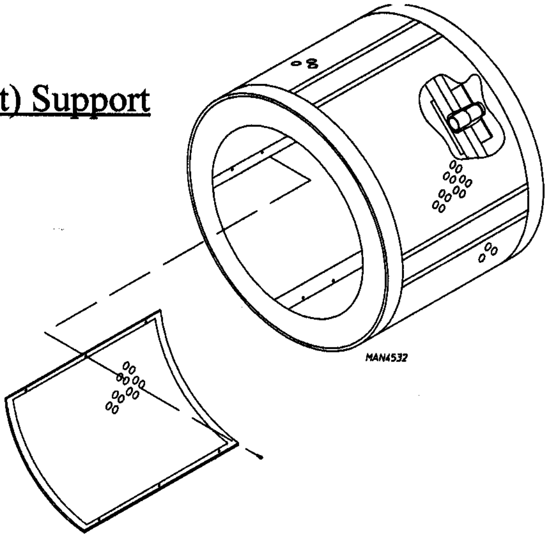
1. Follow ***Step #1 through Step #7*** from "To Replace Front Idler Shaft Bearing."
2. Remove retaining ring closest to the rear pillow block bearing.
3. Loosen the two (2) set screws on each bearing collar.
4. Slide the bearing off the shaft.

5. Replace by reversing procedure.

6. Reestablish electrical power to the dryer.

I. BASKET and SUPPORT

To Replace Tumbler (Basket) and Tumbler (Basket) Support



1. Discontinue electrical power to the dryer.
2. Follow procedure for removal of main door assembly.
3. Follow procedure for removal of front panel assembly.
4. Remove bearing back guard.
5. Remove tumbler (basket) assembly and support.
    a. Loosen the two (2) set screws on the flange bearing.
    b. Remove the retaining ring from the groove of the tumbler (basket) shaft.
    c. Remove the rotational sensor magnet from the tumbler (basket) support shaft.
    d. Remove the tumbler (basket) and support assembly from the front of the dryer. If the tumbler (basket) cannot be removed freely, clean the shaft area and spray WD-40 or similar lubricant. With a block of wood against the shaft end, strike the block wood with a hammer or mallet to move the shaft past any burrs made by the set screws.

IMPORTANT: Never strike the shaft directly with a hammer.

6. Reverse these steps for installation of new tumbler (basket) and tumbler (basket) support.
7. Reestablish electrical power to the dryer.

J. V-BELTS (See illustrations in section F "Pulleys")

V-belts should have proper tension. If too loose, they will slip, excessive wear on the bearings will result. If the pulleys are not properly aligned, excessive belt wear will result. Proper belt tension will allow 1/2" displacement under normal thumb pressure at mid span of belt.

NOTE: Belts ***must always be*** replaced in pairs (matched sets).

V-Belt Tension Adjustment (Drive Shaft to Speed Reducing Shaft)

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen two (2) bolts securing rear pillow block bearing on the drive shaft.
5. Loosen adjustment bolt that is securing the rear pillow block bearing of the drive shaft.
6. Loosen two (2) bolts securing rear speed reducing shaft bearing.
7. Loosen adjustment bolt supplying pressure to the rear bearing on the speed reducing shaft.
8. Remove old V-belts.
9. Reverse these steps to install new V-belts.

NOTE: After tensioning the V-belts, check to make sure both the drive shaft and speed reducing are parallel or level to the base of the dryer.

V-Belt Tension Adjustment (Motor To Speed Reducing Shaft)

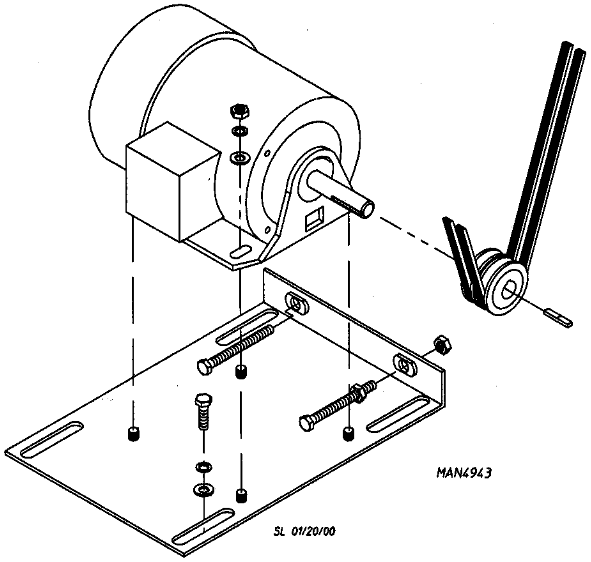
1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Loosen two (2) bolts securing front bearing on speed reducing shaft.
5. Loosen tension bolt that is under the front bearing of the speed reducing shaft.
6. Remove the V-belts.
7. Replace V-belts by reversing the above procedures.

To Replace V-Belts From The Blower Motor To The Fan

1. Loosen the four (4) bolts securing the motor to the base of the dryer.
2. Loosen the tension bolts.
3. Remove old V-belts.
4. Reverse these steps to replace V-belts.

NOTE: Always replace V-belts in pairs.

K. MOTORS

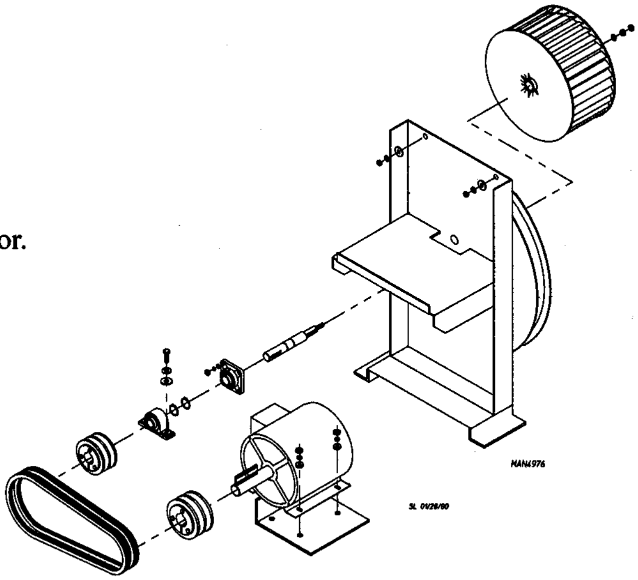


To Replace Drive Motor

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove the left lint wall.
5. Remove the drive V-belts. Follow V-belt replacement from motor to speed reducing shaft.
6. Loosen the four (4) bolts securing the motor to the base of the dryer.
7. Disconnect the motor wiring.
8. Remove old motor pulley and bushing and place on new motor.
9. Reverse these steps to replace drive motor.

To Replace Impellor Motor (Fan Shaft Drive - 50/60 Hz Gas and Steam Models)

1. Discontinue electrical power to the dryer.
2. Remove the lint drawer.
3. Remove the lint door.
4. Remove the left hand lint wall.
5. Loosen the four (4) mounting bolts securing the motor.
6. Loosen the tension bolts.
7. Remove V-belts.
8. Disconnect motor wiring.
9. Remove the motor pulley and bushing.
10. Reverse these steps for installation of new motor.



To Replace Fan Shaft and/or Fan Shaft Bearings

A. To remove from the front

1. Follow ***Step #1 through Step #8*** under “To Replace Impellor Motor.”

2. Follow ***Step #4 and Step #5*** under "To Replace Impellor."
3. Loosen the four (4) bolts securing the fan shaft assembly to the base of the dryer.

NOTE: Models with rear access, it may be easier to remove this plate, to remove the two (2) rear fan shaft assembly bolts.

4. Remove the fan assembly through front access hole.
5. Loosen the set screws in each bearing.
6. Loosen the four (4) flange bolts and two (2) pillow block bolts.
7. Using a pulley, remove the bearing needing replacing.
8. Reverse the procedures to reinstall new bearing.

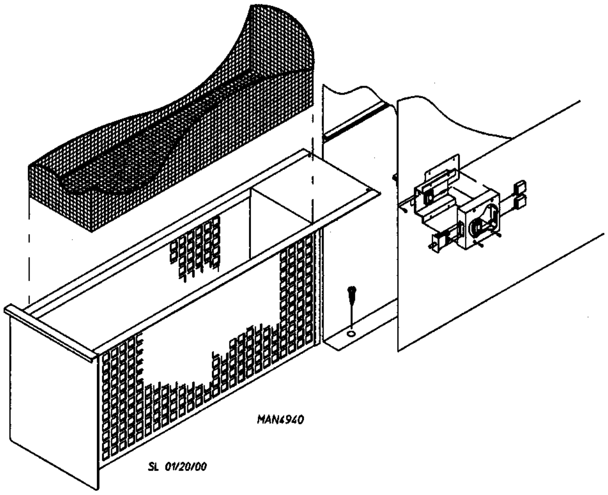
L. IMPELLOR

1. Discontinue electrical power to the dryer.
2. Remove the left side lint wall if necessary for easier access.
3. Remove the six (6) nuts securing the inlet cone to the blower housing.
4. Remove the two (2) left handed jam nuts that hold the impellor to the fan shaft.
5. Remove the impellor, washers, and the key.
6. Replace the impellor, key, washers, left handed jam nuts, and the side panel.
7. Reestablish electrical power to the dryer.

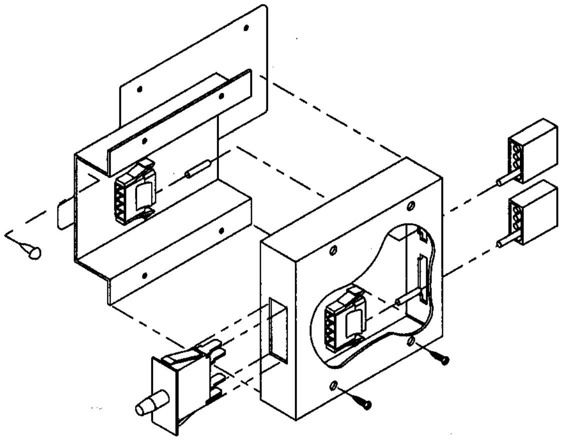
M. LINT DRAWER ASSEMBLY

To Replace Lint Screen

1. Pull out lint drawer.
2. Remove lint screen from lint drawer.
3. Drop new lint screen in place.
4. Slide lint drawer back into dryer.



To Replace Lint Drawer Switch



SL 01/20/00

1. Disconnect electrical power to the dryer.
2. Remove lint drawer and lint door.
3. Disconnect both 4-pin connectors at the rear of the lint switch cover.
4. Remove the one (1) or two (2) screws holding the lint switch cover on.
5. Remove lint switch cover and disconnect the two (2) terminals of the switch.
6. Remove switch by pressing tabs together and push switch out.
7. Install new switch by reversing procedure.

SECTION VI

TROUBLESHOOTING

IMPORTANT: **YOU MUST DISCONNECT and LOCKOUT THE ELECTRIC SUPPLY and THE GAS SUPPLY or THE STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT per OSHA** (Occupational Safety and Health Administration) **STANDARDS.**

The information provided will help isolate the most probable component(s) associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken/ shorted wire may be at fault where electrical components are concerned ... and not necessarily the suspected component itself. Electrical parts **should always be** checked for failure before being returned to the factory. The information provided **should not be** misconstrued as a handbook for use by an untrained person making repairs.

IMPORTANT: When replacing blown fuses, the replacement ***must be*** of the exact rating as the fuse being replaced.

WARNING: ALL SERVICE and TROUBLESHOOTING ***SHOULD BE*** PERFORMED BY A QUALIFIED PROFESSIONAL or SERVICE AGENCY.

WARNING: WHILE MAKING REPAIRS, OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE DRYER or SPECIFIED IN THIS MANUAL.

Refer to section "Electrical Troubleshooting" for a detailed troubleshooting procedure for electrical components.

A. No display on computer...

1. Open circuit breaker switch or blown fuse.
2. Tripped overload on the blower MTR.
3. Faulty wiring connection.
4. Faulty microprocessor controller (computer).

B. Computer will not accept keyboard (touchpad) entries...

1. Keyboard (touchpad) ribbon is not plugged into computer securely.
2. Keyboard (touchpad) is defective.
3. Faulty microprocessor controller (computer).

C. Dryer will not start, but computer display indicators are on and relay output lights are on...

1. Failed contactors.
2. Failed arc suppressor (A.S.) board.
3. Failed motors.
4. Loose wiring connection.

D. Drive motor runs, burner is on, tumbler (basket) will not turn, and the computer is reading "Rotational Sensor Failure"...

1. Broken, damaged, or loose V-belt.
2. Belts are contaminated (oil, grease, etc.).
3. Loose or broken pulley.

E. Drive motor and blower start, computer display heat indicator is on, and relay output lights are on but there is no heat...

1. Failed HSI (Hot Surface Ignition) module.
2. Failed blower motor contactor.
3. Faulty HSI (Hot Surface Ignition) ignitor.
4. Faulty gas valve.

F. Dryer operates, glo bar lights, but gas does not flow...

1. Dryer gas shut-off valve is closed.
2. Failed gas valve (open coil in valve).
3. Loose wiring connection from HSI (Hot Surface Ignition) module to gas valve (Check voltage at gas valve).
4. Failed HSI (Hot Surface Ignition) module.

G. Dryer operates, glo bar lights but there is no ignition even though gas is evident...

1. Gas pressure is too low...Check manifold pressure and take necessary corrective action.
2. Faulty glo bar, glo bar is not hot enough.
3. Glo bar is out of adjustment (readjust within gas flow).
4. Lint accumulation in burner tubes.
5. Low voltage condition to glo bar.

6. Faulty gas valve.
7. No voltage to gas valve.
8. Poor airflow due to restriction in exhaust or dirty lint screen.

H. Dryer operates but is taking too long to dry...

1. An inadequate exhaust duct work system.
2. Restriction in exhaust system.
3. Insufficient make-up air.
4. Poor housekeeping...Dirty or clogged lint screen.
5. Washing machine extractors are not performing properly.
6. An exceptionally cold/humid or low barometric pressure atmosphere.
7. The supply gas may have a low heating value, check with local gas supplier.
8. Failed temperature sensor (temperature calibration is incorrect).
9. Failed microprocessor controller (computer).

I. Thermal overload for drive motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Bearing failure in drive system.
4. Failed motor.
5. Insufficient make-up air.

J. Overload for impellor (fan) motor is tripping...

1. Either an exceptionally low or high voltage supply.
2. Motor bearing failure.
3. Failed motor.
4. Failed overload.
5. Out of balance impellor (fan).
6. Insufficient make-up air.

K. Dryer is tripping the burner hi-limit safety thermostat...

1. Insufficient exhaust duct work...size or restriction in exhaust system.
2. Insufficient make-up air.
3. Lint screen needs cleaning.
4. Damaged impellor (fan).
5. Impellor/fan spinning in the wrong direction.

L. Display reads "Temp Sensor Fail Check Temp Sensor Fuse." Dryer Sensor Circuit Failure...

1. Check 1/8 amp fuse on computer.
2. Faulty microprocessor temperature sensor probe.
3. Open circuit in either one of two (2) wires leading from the sensor probe to the computer.
    a. Connection at sensor bracket assembly connector.
    b. Connection at computer harness connector.

M. Dryer does not start. Display reads "Lint Door"...

1. Lint drawer is open.
2. Faulty lint door switch.
3. Open circuit in lint drawer switch harnesses.

N. There is excessive vibration coming from the tumbler (basket)...

1. Tumbler (basket) is out of adjustment.
2. Drive wheels have failed.
3. Failed tumbler (basket) support.

O. Dryer does not start. Display reads "Main Door"...

1. Main door is open.
2. Faulty main door switch.
3. Open circuit in main door switch harness.

SECTION VII

ELECTRICAL TROUBLESHOOTING

The information provided will help isolate the most probable components associated with the difficulty described. The experienced technician realizes, however, that a loose connection or broken or shorted wire may be at fault where electrical components are concerned...not necessarily the suspect component itself.

ELECTRICAL PARTS *SHOULD ALWAYS BE* CHECKED FOR FAILURE BEFORE BEING RETURNED TO THE FACTORY.

The information provided **should not be** misconstrued as a device for use by an untrained person in making repairs. Only properly licensed technicians should service the equipment.

OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE EQUIPMENT or SPECIFIED IN THIS MANUAL WHILE MAKING REPAIRS.

SECTION VIII

PHASE 6 OPL SYSTEM DIAGNOSTICS

IMPORTANT: YOU MUST DISCONNECT and LOCKOUT ELECTRIC, GAS, or STEAM SUPPLY BEFORE ANY COVERS or GUARDS ARE REMOVED FROM THE MACHINE TO ALLOW ACCESS FOR CLEANING, ADJUSTING, INSTALLATION, or TESTING OF ANY EQUIPMENT PER OSHA (Occupational Safety and Health Administration) **STANDARDS.**

ALL major circuits, including door, microprocessor temperature sensor, heat and motor circuits are monitored. The Phase 6 OPL microprocessor controller (computer) will inform the user, via the L.E.D. (light emitting diode) display of certain failure codes, along with indicators both in L.E.D. (light emitting diode) display and at the output of each relay (and door switch circuit) to easily identify failures.

A. DIAGNOSTIC (L.E.D. [light emitting diode] DISPLAY) FAILURE CODES

1. **SAIL SWITCH FAIL** - this routine will prevent start up on the machine unless the sail switch is in the correct position. If the sail switch is closed prior to start up the display will read "SAIL SWITCH FAIL" along with an audio indication.

2. **No AIRFLOW** - if the sail switch opens during cycle operation the display will read "NO AIRFLOW" along with an audio indication. The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F. Upon failure the machine will shut down and display "No AIRFLOW" with an audio indication.

3. **bURNER SAFETY FAIL** - routine monitors the temperature above the burner. If the Burner Hi-Limit switch opens the display will read "bURNER SAFETY FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F. Upon failure the machine will shut down and display "bURNER SAFETY FAIL" with an audio indication.

4. **dRUM SAFETY FAIL** - this routine monitors the tumbler (basket) temperature if the tumbler (basket) Hi-Limit switch opens prior or during the cycle while the heat was on the machine will display "dRUM SAFETY FAIL." The machine will continue to run with no heat for three (3) minutes or until the temperature drops below 100° F. Upon failure the machine will shut down and display "dRUM SAFETY FAIL" with an audio indication.

5. **NoHEAT** - this routine monitors the gas valve response. If the valve output is discontinued by the ignition control while the heat output cycle is active, the machine will display "NoHEAT," the machine will run with no heat for three (3) minutes or until the temperature drops below 100° F. If the tumbler (basket) temperature is below 100° F upon failure the machine will shut down and display "NoHEAT" with an audio indication.

6. **bURNER CONTRL FAIL** - this routine monitors the ignition control's gas valve output response. If the valve output signal is not present from the ignition control within the valve time limits the Phase 6 microprocessor controller (computer) determines the ignition control has failed. If this occurs when the cycle is active the machine will display "bURNER CONTRL FAIL." If the tumbler (basket) temperature is above 100° F the machine will continue to display "bURNER CONTRL FAIL." The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F. If the tumbler (basket) temperature is below 100° F upon failure the machine will shut down and display "bURNER CONTROL FAIL" with an audio indication.

7. **bURNER FLAME FAIL** - this routine allows two (2) Flame Out retries to occur before proceeding into the error. The count of two (2) will be established every time the call for heat was to occur. Only if it reaches the count of two (2) before the tumbler (basket) temperature has reached the set temperature will this error be triggered. The machine will run with no heat for three (3) minutes or until the temperature drops below 100° F. If the tumbler (basket) temperature is below 100° F upon failure, the machine will shut down and display "bURNER FLAME FAIL" with an audio indication. This process will occur every time the heat output is active.

8. **MAIN dOOR** - this monitors the door circuit. If the machine was not active and the main door was opened the display would read "READY." If a program attempt was made with the main doors open the display will read "MAIN dOOR" with an audio indication. If the machine is active and the main door was opened the display would read "MAIN dOOR" with no audio indication and the dryer will shut down. Once the main door has closed the display would read "PRESS START" press the "ENTER/START" ⊡ Key and it will continue the programmed cycle.

9. **LINT dOOR** - this monitors the lint drawer/door circuit. If the machine was not active and the lint drawer/door was opened the display would read "READY." If a program attempt was made with the lint drawer/door open the display would read "LINT dOOR" with an audio indication. If the machine was active and the lint drawer/door was opened the display would read "LINT dOOR" with no audio indication and the dryer will shut down. Once the lint door was closed the display would read "PRESS START" press the "ENTER/START" ⊡Key and it will continue the programmed cycle.

10. **TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE** - this routine monitors the tumbler (basket) temperature. When the temperature sensor or fuse opens with the machine not active the display will read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. If the machine was active at the time that the temperature sensor or fuse opened the display would read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE." If the tumbler (basket) temperature is above 100° F the machine will continue to display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication and run with no heat for three (3) minutes or until the temperature drops below 100° F. If the tumbler (basket) temperature is below 100° F upon failure the machine will shut down and display "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" with an audio indication. The display will continue to read "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" an audio indication will sound for approximately 5 seconds, every 30 seconds until the problem is corrected or the power to the dryer is discontinued (and the problem is corrected).

NOTE: Once the Phase 6 microprocessor controller (computer) detects a problem in the heat circuit, it updates every 30 seconds, so that if the problem was a loose connection in the circuit which corrected itself, the "TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE" condition would automatically be cancelled and the display will return to "READY."

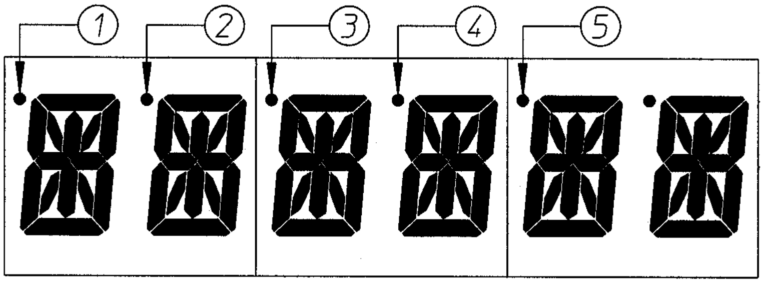
11. **ROTATE SENSOR FAIL** - indicates a rotational sensor circuit failure meaning that there is a fault somewhere in the tumbler (basket) rotation circuit, or the Phase 6 OPL microprocessor controller (computer) program related to this circuit (Program Location 2) is set incorrectly. In the active mode it **should be** (ROTATE SENSOR ACTIVE), if the dryer is not equipped with the optional rotational sensor it **should be** set in the non active mode (No ROTATE SENSOR).

NOTE: RPM - This routine monitors the timing response from the existing rotational sensor input and derives a RPM measurement. To display this RPM measurement (press the "ENTER/START" ☐ Key once and release, then press the "ENTER/START" ☐ Key a second time and hold ...this will display the RPM measurement). The rotational sensor ***must be*** active for operation of this feature.

12. **CHECK MAIN FUSE** - indicates that the circuit fuse protection which is located on the back side of the Phase 6 microprocessor controller (computer) the display would read "CHECK MAIN FUSE." If the display continues after the fuse has been replaced then it is the fault of the Phase 6 microprocessor controller (computer).

B. L.E.D. (light emitting diode) DISPLAY INDICATORS

The L.E.D. (light emitting diode) indicator dots located on the top portion of the display indicate the various Phase 6 OPL computer output functions while a cycle is in progress. These indicator dots (as shown in the illustration below) **DO NOT** necessarily mean that the outputs are functioning. They are only indicating that the function output **should be** active (on).



MAN3450

1. **L.E.D. DISPLAY INDICATOR NUMBER 1**
   a. For Optional Reversing Models:
      1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the forward mode (clockwise [CW] direction).

2. **L.E.D. DISPLAY INDICATOR NUMBER 2**
   a. For Optional Reversing Models:
      1) This indicator dot is on when the drive (tumbler [basket]) motor is operating in the reverse mode (counterclockwise [CCW] direction).

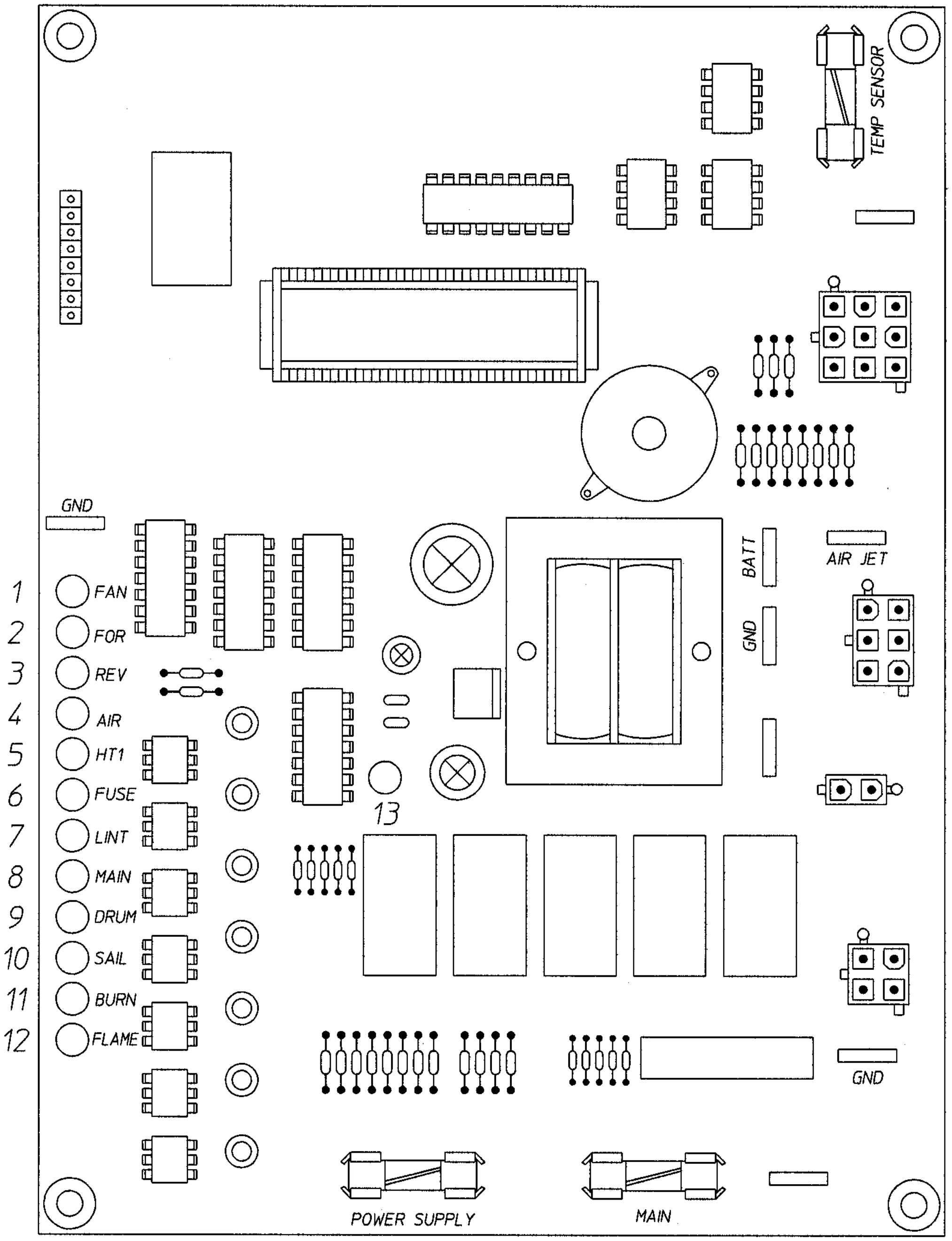
3. **L.E.D. DISPLAY INDICATOR NUMBER 3**
   a. Heat Circuit Indicator:
      1) This indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating circuit to be active (on).

4. **L.E.D. DISPLAY INDICATOR NUMBER 4**
   a. On Indicator
      1) This indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle program is active, the indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time program.

5. **L.E.D. DISPLAY INDICATOR NUMBER 5**
   a. Air Jet Circuit Indicator - *OPTIONAL*
      1) This indicator dot is on at the end of the dryer cycle for approximately 60 seconds.

C. PHASE 6 OPL MICROPROCESSOR CONTROLLER RELAY OUTPUT L.E.D. (light emitting diode) INDICATORS

There are a series of five (5) L.E.D. (light emitting diode) indicators (ORANGE LIGHTS) located at the backside are of the Phase 6 OPL microprocessor controller (computer). These are identified or labeled (from top to bottom in the illustration below as: FAN-BLOWER, FOR-FORWARD, REV-REVERSE, AIR-AIR-JET, HT1-HEAT OUTPUT. There are a series of seven (7) L.E.D. (light emitting diode) indicators (RED LIGHTS) FUSE-MAIN FUSE, LINT- LINT DOOR, MAIN-MAIN DOOR, DRUM-TUMBLER (BASKET) HI-LIMIT, SAIL-SAIL SWITCH, BURN-BURNER HI-LIMIT, FLAME-FLAME PROBE). The L.E.D. (light emitting diode) in the center of the board (RED LIGHT) indicates power supplied to the Phase 6 OPL microprocessor controller (computer). These L.E.D.'S (light emitting diode's) indicate the inputs and outputs of the Phase 6 OPL microprocessor controller (computer) as it monitors the safety circuits.


TEMP SENSOR
GND
1
FAN
2
FOR
3
REV
4
AIR
5
HT1
6
FUSE
7
LINT
8
MAIN
9
DRUM
10
SAIL
11
BURN
12
FLAME
13
BATT
GND
AIR JET
GND
POWER SUPPLY
MAIN

MAN3449

SECTION IX

L.E.D. DISPLAY/CODES

The L.E.D. (light emitting diode) display informs the operator of cycle status, program verification, and displays important diagnostic codes and fault codes.

A. L.E.D. (light emitting diode) DISPLAY OPERATING STATUS

1. Cycles in Progress

   a. While the dryer is operating, the L.E.D. (light emitting diode) display will read which cycle is in progress. For example, in Drying Cycle (Mode), the L.E.D. (light emitting diode) display will read "dRYING" and in the Cool Down Cycle (Mode) the L.E.D. (light emitting diode) display will read "COOL."

2. Cycle Status

   a. While a cycle is in progress, the L.E.D. (light emitting diode) display will show the progress of the cycle (load) that is being processed.

      1) Automatic Drying Cycle

         a) While a cycle is in progress the cycle status, elapse time and dRUM TEMP will be displayed with [PL5] FLASH active (NFLASH active the "ENTER/START" key **must be** pressed to display dRUM TEMP). Approximately half way through the drying cycle, the cycle status portion of the L.E.D. (light emitting diode) will display (i.e. dRY LEVEL 68 PcT). The display will change and count upward until the percentage of extraction programmed is reached.

      2) Timed (Manual) Drying Cycle

         a) While a cycle is in progress the cycle status, time remaining and dRUM TEMP will be displayed with [PL5] FLASH active (NFLASH active the "ENTER/START" key **must be** pressed to display dRUM TEMP).

3. Alternate Display Programs

   a. Programming allows for the L.E.D. (light emitting diode) display to read just the tumbler (basket) temperature or flash back and forth from Cycle in Progress or tumbler (basket) Temperature while the dryer cycle is in progress. Unless otherwise specified at the time of ordering the dryer, the Phase 6 OPL microprocessor controller (computer) is programmed not to flash and to read the Cycle in Progress.

NOTE: Refer to the illustration on the following page for details.

4. Indicator Dots (refer to **page 48**)

   a. Located at the top of the L.E.D. (light emitting diode) display is a series of dots which indicate the various Phase 6 OPL microprocessor controller (computer) output functions while a cycle is in progress.

1) Illustration No. 1

   a) **FORWARD INDICATOR** - this indicator dot is functional for dryer models with the Reversing Action Option ONLY. This indicator dot will be on when the tumbler (basket) is in the forward (clockwise [CW]) direction. Additionally, when the Anti-Wrinkle Program is active, this indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time Program (Mode).

2) Illustration No. 2 (refer to **illustration below**)

   a) **REVERSING INDICATOR** - this indicator dot is functional for dryer models with the Reversing Action Option ONLY. This indicator dot will be on when the tumbler (basket) is in the reverse (counterclockwise [CCW]) direction.

3) Illustration No. 3 (refer to **illustration below**)

   a) **HEAT INDICATOR** - this indicator dot is on whenever the Phase 6 OPL microprocessor controller (computer) is calling for the heating unit to be active (on).

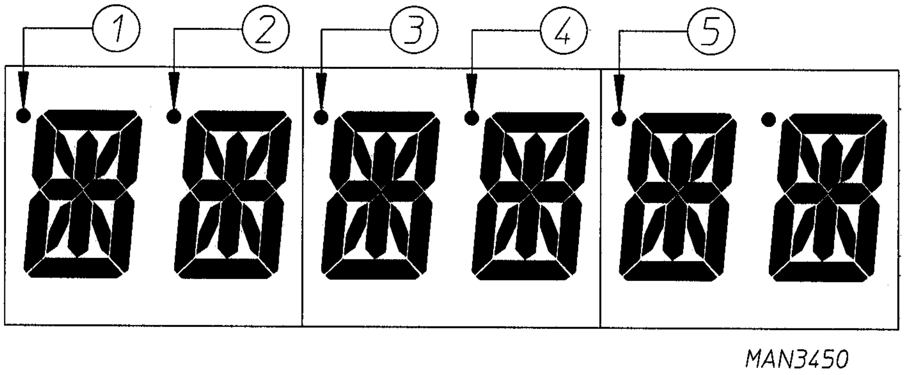
4) Illustration No. 4 (refer to **illustration below**)

   a) **ON INDICATOR** - this indicator dot is on whenever a cycle is in progress. Additionally, when the Anti-Wrinkle Program is active, this indicator dot will be on whenever the Phase 6 OPL microprocessor controller (computer) is in the Guard On Time Program.

5) Illustration No. 5 (refer to **illustration below**) *OPTIONAL*

   a) **AIR JET CIRCUIT INDICATOR** - this indicator dot is on at the end of the drying cycle for approximately sixty (60) seconds.

B. PHASE 6 OPL MICROPROCESSOR L.E.D. (light emitting diode) DISPLAYS



1. Tumbler (basket) in **FORWARD MODE** (clockwise [CW]) **INDICATOR**
2. Tumbler (basket) in **REVERSE MODE** (counterclockwise [CCW]) **INDICATOR**
3. **HEAT ON INDICATOR**
4. **ON INDICATOR** (dryer is in operation mode)
5. **AIR JET INDICATOR** - *OPTIONAL*

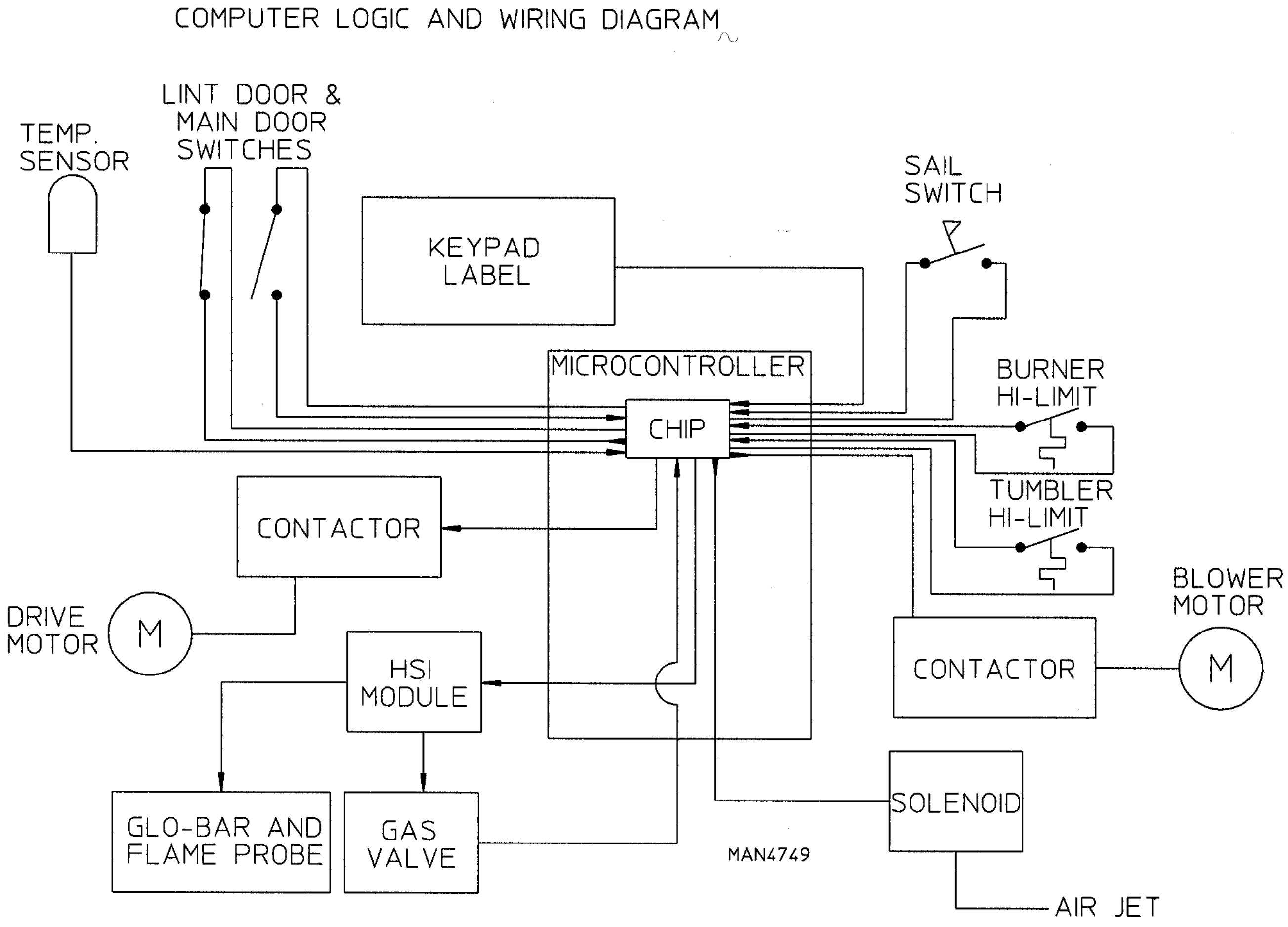
C. L.E.D. CODES

1. Display Codes

A	SLOPE FACTOR
ALL REV	ALWAYS REVERSING
ANTI WRINKL dELAY TIME	ANTI-WRINKLE DELAY TIME
ANTI WRINKL GUARd ACTIVE	ANTI-WRINKLE PROGRAM ACTIVE
ANTI WRINKL GUARd ON TIME	ANTI-WRINKLE GUARD ON TIME
AUTO CYCLE	AUTOMATIC MODE
b	HEAT LOSS (OFF SET) FACTOR
bURNER CONTROL FAIL	GAS ONLY ... POWER (24VAC) IS NOT EVIDENT AT GAS VALVE
bURNER FLAME FAIL	NO BURNER FLAME SENSED
bURNER SAFETY FAIL	GAS/ELECTRIC ONLY ... BURNER/OVEN OPEN HI-LIMIT CIRCUIT
bUZZ	BUZZER (TONE)
bUZZ TIME	BUZ TIME
°CEL	DEGREE IN CELSIUS
CHECK MAIN FUSE	MAIN FUSE FAILURE
CLEAN LINT	PROMPT TO CLEAN LINT SCREEN, DRYER CYCLE LOCKOUT
COOL	COOL DOWN CYCLE IN PROGRESS
COOL TIME__M	COOL DOWN TIME
COOL TEMP___	COOL DOWN TEMPERATURE
CYCLEA	PREPROGRAMMED CYCLE A
CYCLEb	PREPROGRAMMED CYCLE B
CYCLEC	PREPROGRAMMED CYCLE C
CYCLEd	PREPROGRAMMED CYCLE D
CYCLEE	PREPROGRAMMED CYCLE E
CYCLEF	PREPROGRAMMED CYCLE F
dONE	DRYING or COOLING CYCLE COMPLETE OR DRYER IN ANTI-WRINKLE MODE
dRYING	DRYING CYCLE IN PROGRESS
dRY LEVEL___	DRYNESS LEVEL (PERCENTAGE OF EXTRACTION) (NUMERICAL VALUE)
dRY TEMP F___	DRYING TEMPERATURE
dRY TIME__M	LENGTH OF DRYING CYCLE
dRUM SAFETY FAIL	TUMBLER (BASKET) HI-LIMIT CIRCUIT IS OPEN
ELAPSE TIME___MIN	CYCLE DISPLAY TIME
ELECTRIC	SPECIFIC HEAT TYPE OF DRYER ... ELECTRICALLY HEATED
F	FABRIC TEMPERATURE
°FAR	DEGREE IN FAHRENHEIT
FLASH	FLASH DISPLAY ACTIVE
GAS	SPECIFIC HEAT TYPE OF DRYER ... GAS HEATED
HOT	INDICATES AN OVERHEAT CONDITION
LINT dOOR	LINT DRAWER / DOOR CIRCUIT IS OPEN OR FAULT IN THE A.C. SWITCH CIRCUIT
LINT COUNT	DRYING CYCLES RANGE FROM 1-10 CYCLES BEFORE CLEAN LINT DISPLAY
__M REMAIN	CYCLE DISPLAY TIME
MAIN dOOR	DOOR CIRCUIT IS OPEN OR FAULT IN THE A.C. DOOR SWITCH CIRCUIT
MANUAL CYCLE	MANUAL MODE
MAX ANTI WRINKL GUARd	MAXIMUM GUARD TIME
NFLASH	FLASH DISPLAY NOT ACTIVE
NoAIR FLOW	SAIL SWITCH OPEN
NoANTI WRINKL GUARd	ANTI-WRINKLE PROGRAM IS NOT ACTIVE
NoBUZZ	NO BUZZER (TONE)
NoHEAT	GAS ONLY ... IGNITION ATTEMPT FAILURE
NoREV	NO REVERSE
No ROTATE SENSOR	NO ROTATIONAL SENSOR SELECTED
PROGRM	PROGRAM MODE
REAdY	NO CYCLE IN PROGRESS
ROTATE SENSOR ACTIVE	ROTATIONAL SENSOR SELECTED
ROTATE SENSOR FAIL	ROTATIONAL SENSOR CIRCUIT FAILURE
__RPM	MONITORS TUMBLER (BASKET) RPM WITH ROTATIONAL SENSOR CIRCUIT ACTIVE
SAIL SWITCH FAIL	GAS/ELECTRIC ONLY. ATTEMPT MADE TO START DRYER WITH SAIL SWITCH DISABLED IN CLOSED POSITION
SELREV.	SELECT REVERSE
SPIN TIME	SPIN TIME
START GUARd	START ANTI WRINKLE GUARD CYCLE
STEAM	SPECIFIC HEAT TYPE OF DRYER ... STEAM HEATED
STOP TIME	STOP TIME
TEMP SENSOR FAIL CHECK TEMP SENSOR FUSE	FAULT IN M.P. HEAT SENSING CIRCUIT

D. COMPUTER LOGIC and WIRING DIAGRAM

1. **Operator enters desired selection(s).**


COMPUTER LOGIC AND WIRING DIAGRAM
TEMP. SENSOR
LINT DOOR & MAIN DOOR SWITCHES
KEYPAD LABEL
SAIL SWITCH
MICROCONTROLLER
CHIP
BURNER HI-LIMIT
TUMBLER HI-LIMIT
CONTACTOR
DRIVE MOTOR
M
HSI MODULE
BLOWER MOTOR
CONTACTOR
M
SOLENOID
GLO-BAR AND FLAME PROBE
GAS VALVE
MAN4749
AIR JET

2. **Information entered is sent to the microcontroller via the keyboard (touchpad).**

3. **The input information is sorted/processed and executed by the microcomputer chip.**

4. **The microcomputer output signal activates the contactors and HSI (Hot Surface Ignition) module which control machine functions.**

NOTE: When contacting **ADC** with electrical questions, please have on hand the correct wiring diagram number for your particular machine. This number is located on the top right-hand corner of the diagram. It is a six (6) digit number followed by a letter to distinguish the revision dates (refer to illustration).

The wiring diagrams used in Troubleshooting are specifically for dryers manufactured at the time of publishing. Your particular model may vary slightly depending on the date of manufacturing and options available. The correct wiring diagram and number is either taped to the rear of the control door on each dryer, or placed in the control box. If your particular diagram is lost or unreadable, call **ADC** with the serial number of the dryer. **ADC** will be more than happy to send you a diagram by fax or mail.

A. No Display Condition...

1. Check main fuses or circuit breaker.
2. Check blower motor overload...If tripped, reset.
3. Check fuse 1 or fuse 2 and if either are blown, replace.
4. Check to make sure the "EMERGENCY STOP" (E-Stop) button is not depressed.
5. Between pin 1 and ground of the 15 pin connector you **should be** getting 24 V.
6. If no voltage is present at pin 1 and ground, double check ***Step #1 through Step #4***.
7. Take voltage reading across the microprocessor 9 pin connector nos. 1 and 2.

   If there is voltage, replace the computer.

   If there is no voltage, there is a faulty wire(s) or termination(s) between the 15 pin connector and the microprocessor.

NOTE: In this next section ALL voltage checks ***must be*** done in the operating mode with the appropriate microprocessor dot on!! Also appropriate LED (light emitting diode) output light on!!

NOTE: In this next section when checking for voltage you are looking for 24 AC volts unless otherwise specified.

B. Drive motor reverses but does not go forward, blower motor runs...

1. If computer dot (first dot on the left) does not come on, replace the computer.
2. Check for voltage across the coil of the forward contactor located in the rear panel box. The contactor according to your diagram is marked CR2. The coil markings A1 and A2.

   If voltage is present, there is a faulty wire(s) or termination(s) between BS2 and contactor coil (CR2).

   If there is voltage across the two (2) BS2 terminals and no voltage across the two (2) BS2 terminals, replace the arc suppressor (A.S.) board.

   If there is voltage across the two (2) AS2 terminals on the arc suppressor (A.S.) board, the problem is a faulty wire(s) or termination(s) between the AS2 board and the 9 pin computer connector no. 8, or faulty computer.

C. Drive motor works in forward mode but does not reverse, blower motor runs...

1. If computer dot (second one from left) does not come on, check program to see if set for reverse.
2. If set for reverse, replace computer.
3. Check for voltage across the coil of the reversing contactor located in the rear panel box. The contactor according to your diagram is CR3, also the markings on the coil are A1 and A2.

If there is voltage, replace the coil or the complete contactor.

If there is no voltage, check for voltage across the two (2) BS3 terminals on the arc suppressor (A.S.) board.

If there is voltage across the two (2) BS1 terminals and no voltage across the coil of the reversing contactor (A1 and A2), the problem is faulty wire(s) or termination(s) between BS1 and the contactor coil.

4. If there is no voltage between the two (2) BS3 terminals on the arc suppressor (A.S.) board, check for voltage across the two (2) AS3 terminals on the board.

   If there is voltage across the two (2) AS3 terminals and no voltage across the two (2) BS3 terminals, replace the arc suppressor (A.S.) board.

   If there is no voltage across the two (2) AS3 terminals, the problem is faulty wire(s) or termination(s) between the arc suppressor (A.S.) board and the computer 9 pin connector no. 9, or a faulty computer.

D. Blower motor does not operate, drive motor runs...

1. Check for voltage across terminals A1 and A2 of the impellor contactor. This is the single contactor in the rear control box.

   If voltage is present check for voltage across the blower motor. If there is voltage at the blower motor replace the motor.

   If there is no voltage at the blower motor, problem is faulty wire(s) or termination(s) between the contactor and the motor.

2. If there is no voltage present at A1 and A2 of the contactor, check for voltage across the two (2) BS1 terminals of the arc suppressor (A.S.) board.

   If there is voltage present at the two (2) BS1 terminals, problem is faulty wire(s) or termination(s) between the two (2) BS3 terminals and the coil (A1 and A2) terminals.

   If there is no voltage across the two (2) BS1 terminals, check for voltage across the two (2) AS1 terminals.

   If there is voltage across the two (2) AS1 terminals and there is no voltage between the two (2) BS1 terminals, replace the arc suppressor (A.S.) board.

3. If there is no voltage across the two (2) AS1 terminals, problem is faulty wire(s) or termination(s) between the two (2) AS1 terminals and the computer board 9 pin connector no. 7, or faulty computer.

E. "No Heat" drive and blower motors run, display reads normal (Gas Models)...

1. Check for voltage across the six pin computer connector between pin 5 and ground.

   If no voltage is present, problem is faulty computer or **should be** displaying an error code for an open or faulty heat safety (Sail Switch, Burner Hi-Limit, Tumbler [Basket] Hi-Limit).

2. If voltage is present, check for voltage across HSI (Hot Surface Ignition) module "W" and "GND."

If no voltage is present, check voltage at pin 5 and 8 of the J2 connector. Which is located in the front electrical box. If voltage is present then problem is a broken wire between 9 pin connector and HSI (Hot Surface Ignition) module or faulty termination.

If no voltage is present, then there is a broken wire between computer and 9 pin connector or faulty termination.

F. "No Heat" drive and blower motors run, display reads normal (Steam Models)...

1. Check for voltage across pin 1 and 2 of the J6 connector.

   If no voltage is present, check for voltage on the J10 pin 5 to ground.

2. If voltage is present, problem is a faulty wire or termination. Between pin 5 of the J10 connector to pin 1 of J6 connector.

   If no voltage is present, problem is computer board.

G. "Lint Door" condition...

NOTE: Make sure lint drawer is closed. Also, if checking the switch, the plunger ***must be*** depressed.

Check L.E.D. (light emitting diode) input light "lint door" on component side of the computer. If light is on, replace computer.

1. Check voltage (24 VAC) across 2 pin connector, pin 3 and ground. This connector is located at the lint drawer switch box.

   If voltage is present, problem is faulty wire(s) or termination(s) between computer pin #4 of 9 pin connector.

   If no voltage is present, check for voltage across the 9 pin modular connector nos. 3 and ground.

   If voltage is evident at both points, problem is faulty computer.

H. "Main Door" condition...

NOTE: Make sure main door is closed. Also, if checking the switch, the plunger ***must be*** depressed.

Check L.E.D. (light emitting diode) input light "main door" on component side of the computer. If light is on, replace computer.

1. Check voltage (24 VAC) across 2 pin connector (J5) between pin 1 and ground.

   If voltage is present, problem is faulty wire or termination between the 9 pin computer connector pin 6 and the opposite side of door switch.

   If no voltage is present, check for voltage across pin 5 of the 9 pin computer connector and ground.

   If there is no voltage at this point then problem is faulty computer.

   If there is voltage at this point then problem is broken wire or faulty termination between pin 5 of 9 pin computer connector and pin 1 of J5 connector.

I. Microprocessor reads "Temp Sensor Fuse."

NOTE: Before continuing with this section check the .125 MA fuse on the computer board.

1. Replace the temperature sensor underneath the tumbler (basket) on a bracket (the bullet shaped device).

2. If it still reads "Temp Sensor Fuse," unplug the 4 pin connector from the temperature sensor bracket. Also, unplug the microprocessor 4 pin connector from the computer board. Where the white/red striped wire is going into the connector, take a continuity reading across the wire and that same wire from the 4 pin connector that you unplugged earlier in this paragraph.

   If there is no continuity, check for break in wire, a short to the ground, loose termination(s), or even replace the wire.

   If there is continuity, do the same thing to the black wire right next to the white/red striped wire in the 4 pin connector.

   If there is no continuity, check for break in wire, a short to ground, loose termination(s), or even replace the wire.

   If there is continuity, computer board is faulty.

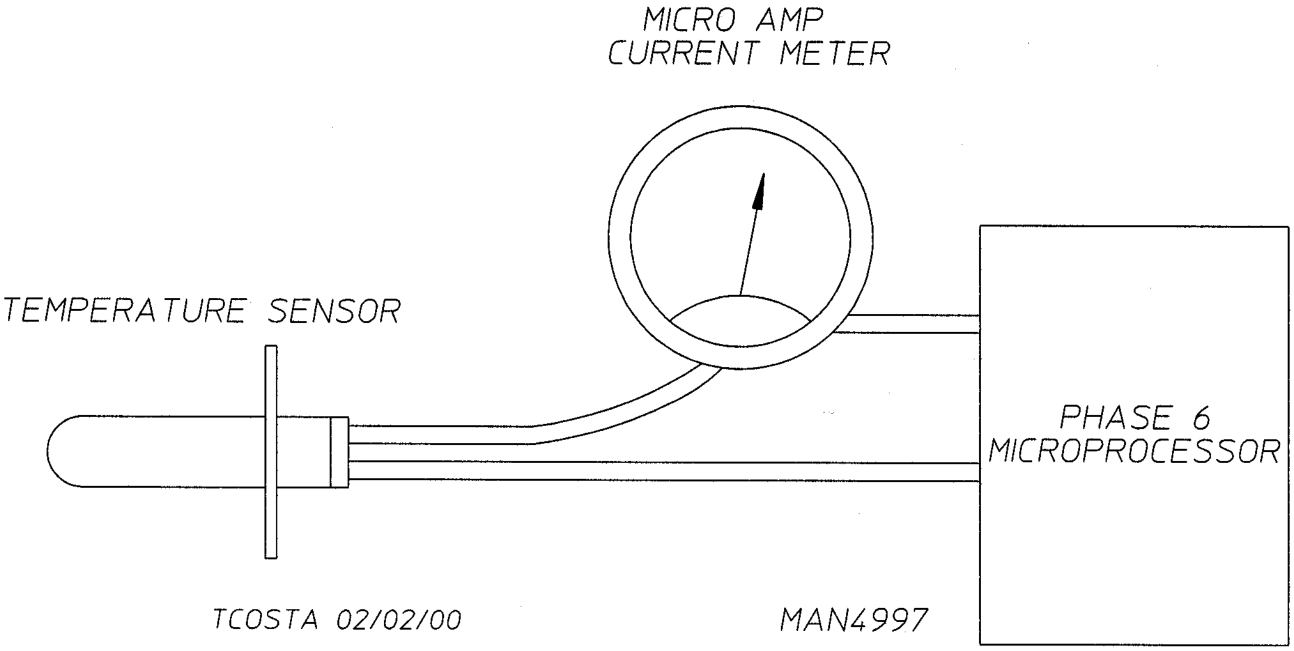
   a. To check temperature sensor

      1) Place your digital multimeter on diode check range.

      2) Place the red lead of your meter on the "black" wire of the temperature sensor and the black lead of your motor on the white lead of your temperature sensor. At this point you should get no response from the meter (infinite). If you get a reading the temp sensor is defective.

      3) Reverse leads to temp sensor matching the black of the meter to the "black" wire of the temperature sensor and the red of the meter with the "white" wire of the temperature sensor. At this point you should measure approximately 1.8 V. This is the turn on voltage of the device. If you hold the temp sensor in your hands and warm it, the reading will decrease corresponding to a higher current flow.

      4) The Phase 6 Microprocessor Controller (computer) is powered by 24 VAC on pin #12 of the J7 9 pin connector. The temperature sensor probe is a bullet shaped device that is located above the lint basket. This temperature probe is used to sense the temperature in the exhaust of the dryer. The temperature sensor is a two (2) terminal monolithic integrated circuit temperature transducer that provides an output current proportional to absolute temperature. The transducer acts as a high impedance temperature dependant current source of 1µA/°K. The typical accuracy of this probe is +/- 1.5° C (+/- 2.7° F). In a case where the temperature reaches 220° F (104° C), the Phase 6 microprocessor (computer) will shut down and the L.E.D. (light emitting diode) will display "Hot." To restart a cycle the "CLEAR/STOP" button **must first be** pressed.


MICRO AMP
CURRENT METER
TEMPERATURE SENSOR
PHASE 6
MICROPROCESSOR
TCOSTA 02/02/00
MAN4997

$$°F = \frac{9}{5}(°C + 32)$$

$$°C = \frac{5}{9}(°F - 32)$$

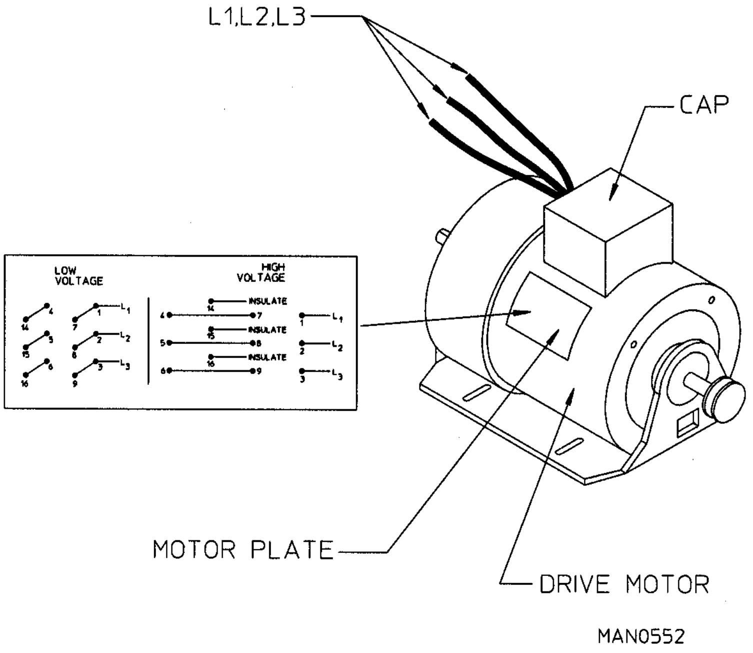
$$\text{Temperature Sensor Current} = \frac{°C + °K\ (273.15)}{1{,}000{,}000} = \text{microamps}\ (\mu A)$$

SECTION X

TECHNICAL INFORMATION

The following section contains various technical information important to the service person in servicing and maintaining the dryer.

A. MOTOR PLATE (HIGH and LOW VOLTAGE)



The motor plate is located on the side of the drive motor (refer to illustration) and contains a graphical representation of the motor wiring for both low voltage rating and high voltage rating.

Removing the cap reveals the wiring to the motor. On each wire there is a number which corresponds to the numbers on the motor plate. Depending on whether the dryer is operating on low voltage or high voltage, the wiring should match the motor plate as follows:

The dots and lines represent connections (refer to illustration). **For example:**

On Low Voltage - wire #14 is connected to wire #4

- wire #1 is connected to wire #7, which in turn are both connected to L1

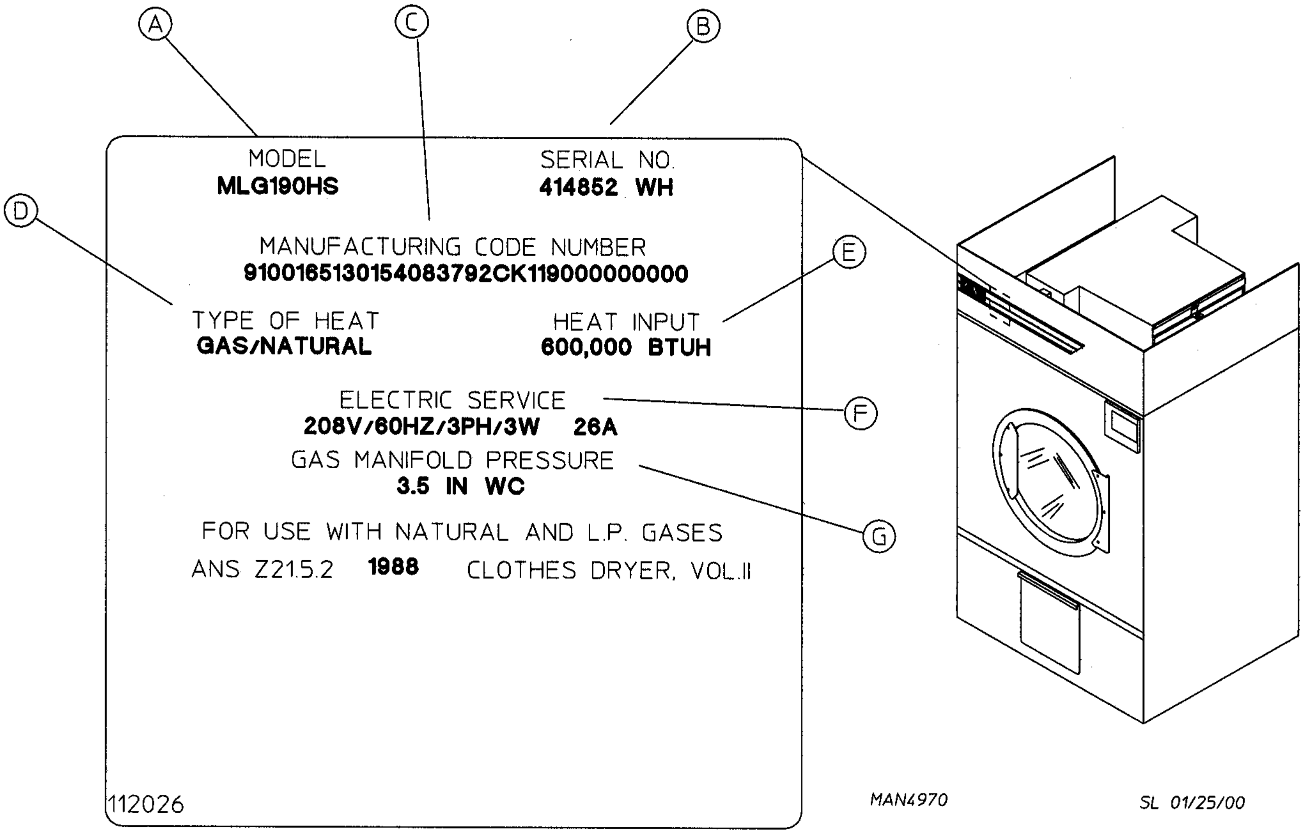
On High Voltage - wire #14 is insulated or capped

- wire #4 is connected to wire #7

- wire #1 is connected to L1

B. DATA LABEL

Contacting **American Dryer Corporation (ADC)**



MODEL
MLG190HS

SERIAL NO.
414852 WH

MANUFACTURING CODE NUMBER
9100165130154083792CK119000000000

TYPE OF HEAT
GAS/NATURAL

HEAT INPUT
600,000 BTUH

ELECTRIC SERVICE
208V/60HZ/3PH/3W 26A

GAS MANIFOLD PRESSURE
3.5 IN WC

FOR USE WITH NATURAL AND L.P. GASES
ANS Z21.5.2 **1988** CLOTHES DRYER, VOL.II

112026

MAN4970

SL 01/25/00

When contacting **ADC**, certain information is required to insure proper service/parts information. This information is on the data label, located on the top right corner of the dryer, viewed from the rear (refer to illustration). When contacting **ADC**, please have the model number and serial number readily accessible.

Information on the Data Label

A. Model number — The model number is an **ADC** number which describes the size of the dryer and the type of heat (gas or steam).

B. Serial number — The serial number allows **ADC** to gather information on your particular dryer.

C. Manufacturing code number— The manufacturing code number is a number issued by **ADC** which describes **ALL** possible options on your particular model.

D. Type of heat— Describes the type of heat; gas (natural or L.P.), steam or electric.

E. Heat input— (For gas dryers) describes the heat input in British Thermal Units.

F. Electric service— Describes the electric service for your particular models.

G. Gas manifold pressure— Describe the manifold pressure as taken at the gas valve pressure tap (refer to “Using a Manometer”).

C. USING A MANOMETER

How To Use A Manometer

1. With dryer in non-operating mode, remove plug on the gas valve pressure tap.

2. Attach plastic tubing to pressure tap. Fitting is supplied with manometer (refer to illustration).

3. Attach manometer to dryer using magnet.

NOTE: Place manometer in a position so that readings can be taken at eye level.

4. Fill manometer with water, as shown in illustration, to the zero level.

5. Start dryer. With burner on, take a reading.

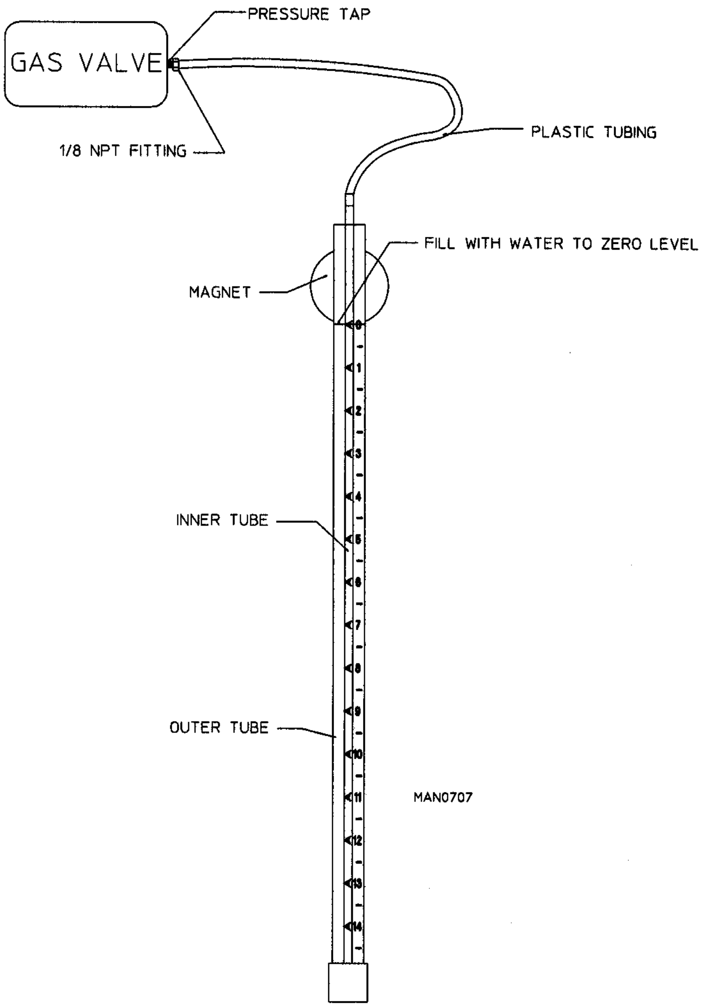
   a. Read water level at the inner tube. Readings **should be** taken at eye level.

   b. Correct readings **should be**:

      NATURAL GAS: 3.5 Inches W.C.
      L.P. GAS: 10.5 Inches W.C.

6. If water column pressure is incorrect refer to "TO ADJUST GAS PRESSURE."

7. Reverse procedure for removing manometer.


PRESSURE TAP
GAS VALVE
PLASTIC TUBING
1/8 NPT FITTING
FILL WITH WATER TO ZERO LEVEL
MAGNET
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
INNER TUBE
OUTER TUBE
MAN0707

D. TOOL LIST

Straight Head Screwdriver

Phillips Head Screwdriver

Sensor Pin and Socket Tool (P/N 122801)

Pliers

1/4" Nut Driver

3/8" Open End Wrench

5/8" Open End Wrench

5/8" Deep Socket Wrench

3/8" Socket Wrench

1/2" Socket or Open End Wrench

1/4" Open End Wrench

5/16" Socket or Open End Wrench

1/2" Socket Wrench

7/16" Socket or Open End Wrench

5/16" Nut Driver

12" Pipe Wrench (2)

1/8" "T" Shaped or "L" Shaped Allen Wrench

3/16" "T" Shaped or "L" Shaped Allen Wrench

Wire Cutters

1/2" Allen Wrench

3/8" Allen Wrench

Channel Locks

Manometer (**ADC** P/N 122804)

MP Pin Extraction Tool (**ADC** P/N 122800)

American Dryer Corp.®